

Report on a Helicopter-Borne AeroTEM System Electromagnetic & Magnetic Survey



Aeroquest Job # 08-093

Block A & B Project

New Liskeard, ON
NTS 031M04, 05

For

Temex Resources Corp.

by



7687 Bath Road,
Mississauga, ON, L4T 3T1
Tel: (905) 672-9129
Fax: (905) 672-7083
www.aeroquest.ca

Report date: September 2008

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LIST OF MAPS SCALE (1:10000)

- TMI – Coloured Total Magnetic Intensity (TMI) with line contours and EM anomaly symbols.
- ZOFF1 – AeroTEM Z1 Off-time with line contours and EM anomaly symbols.
- EM – AeroTEM off-time profiles and EM anomaly symbols.

1. INTRODUCTION

This report describes a helicopter-borne geophysical survey carried out on behalf of Temex Resources Corp. on their Block A & Block B Project, New Liskeard, ON

The principal geophysical sensor is Aeroquest's exclusive AeroTEM IV ('Papa' System) time domain helicopter electromagnetic system which is employed in conjunction with a high-sensitivity caesium vapour magnetometer. Ancillary equipment includes a real-time differential GPS navigation system, radar altimeter, video recorder, and a base station magnetometer. Full-waveform streaming EM data is recorded at 36,000 samples per second. The streaming data comprise the transmitted waveform, and the X component and Z component of the resultant field at the receivers. A secondary acquisition system (RMS) records the ancillary data.

The total survey coverage is 1089.5 km, of which 1061.6 line-km fell within the defined project area (Appendix 1). The survey was flown at 100 metres line spacing in a N-S (0°/180°) flight direction. The survey flying described in this report took place on April 29th - May 28th, 2008. This report describes the survey logistics, the data processing, presentation, and provides a brief overview of the results.

2. SURVEY AREA

The Project area is located in southeast Ontario just 25 kilometres from the Québec border (Figure 1). The area lies 30 km north of New Liskeard, ON, and 30 km northeast of Ville Marie, QC. The project was made up of two blocks, Block A (94.90 km²), and infill block, Block B (4.50 km²) over flat terrain.

The base of survey operations and crew accommodation was in Ville Marie, QC.

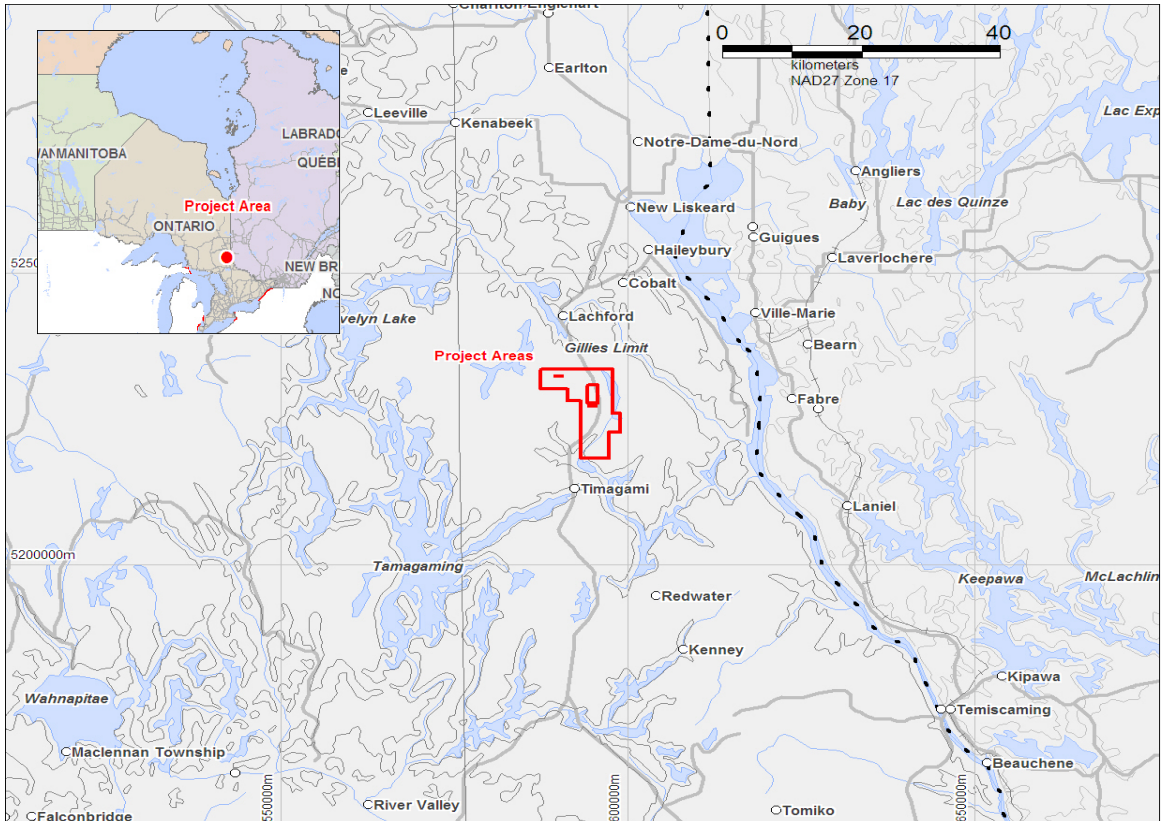


Figure 1. Project Area

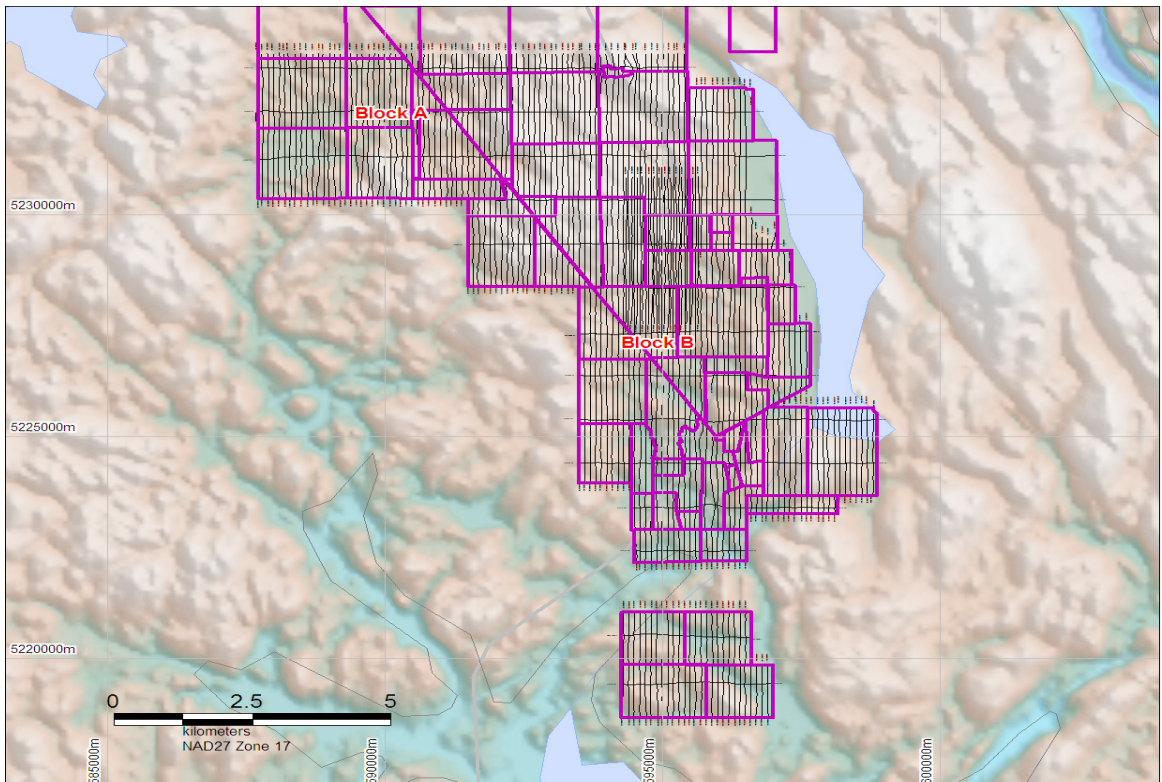


Figure 2. Project flight path and claims with shaded topography

3. SURVEY SPECIFICATIONS AND PROCEDURES

The survey specifications are summarised in the following table:

Project Name	Line Spacing (metres)	Line Direction	Survey Coverage (line-km)	Dates flown
Block A	100	N-S (0°)	1043	April 29 th -May 28 th , 2008
Block B	100	N-S (0°)	46.5	May 28 th , 2008

Table 1. Survey specifications summary

The survey coverage was calculated by adding up the along-line distance of the survey lines and control (tie) lines as presented in the final Geosoft database. The survey was flown with a line spacing of 100 metres. The control (tie) lines were flown perpendicular to the survey lines with a spacing of 990 metres.

The nominal EM bird terrain clearance is 30 metres, but can be higher in more rugged terrain due to safety considerations and the capabilities of the aircraft. The magnetometer sensor is mounted in a smaller bird connected to the tow rope 31 metres above the EM bird and 21 metres below the helicopter (Figure 4). Nominal survey speed over relatively flat terrain is 75 km/hr and is generally lower in rougher terrain. Scan rates for ancillary data acquisition is 0.1 second for the magnetometer and altimeter, and 0.2 second for the GPS determined position. The EM data is acquired as a data stream at a sampling rate of 36,000 samples per second and is processed to generate final data at 10 samples per second. The 10 samples per second translate to a geophysical reading about every 1.5 to 2.5 metres along the flight path.

3.1. NAVIGATION

Navigation is carried out using a GPS receiver, an AGNAV2 system for navigation control, and an RMS DGR-33 data acquisition system which records the GPS coordinates. The x-y-z position of the aircraft, as reported by the GPS, is recorded at 0.2 second intervals. The system has a published accuracy of less than 3 metres. A recent static ground test of the Mid-Tech WAAS GPS yielded a standard deviation in x and y of under 0.6 metres and for z under 1.5 metres over a two-hour period.

3.2. SYSTEM DRIFT

Unlike frequency domain electromagnetic systems, the AeroTEM IV system has negligible drift due to thermal expansion. The operator is responsible for ensuring the instrument is properly warmed up prior to departure and that the instruments are operated properly throughout the flight. The operator maintains a detailed flight log during the survey noting the times of the flight and any unusual geophysical or topographic features. Each flight included at least two high elevation 'background' checks. During the high elevation checks, an internal 5 second wide calibration pulse in all EM channels was generated in order to ensure that the gain of the system remained constant and within specifications.

3.3. FIELD QA/QC PROCEDURES

On return of the pilot and operator to the base, usually after each flight, the AeroDAS streaming EM data and the RMS data are carried on removable hard drives and FlashCards,

respectively and transferred to the data processing work station. At the end of each day, the base station magnetometer data on FlashCard is retrieved from the base station unit.

Data verification and quality control includes a comparison of the acquired GPS data with the flight plan; verification and conversion of the RMS data to an ASCII format XYZ data file; verification of the base station magnetometer data and conversion to ASCII format XYZ data; and loading, processing and conversion of the steaming EM data from the removable hard drive. All data is then merged to an ASCII XYZ format file which is then imported to an Oasis database for further QA/QC and for the production of preliminary EM, magnetic contour, and flight path maps.

Survey lines which show excessive deviation from the intended flight path are re-flown. Any line or portion of a line on which the data quality did not meet the contract specification was noted and reflown.

4. AIRCRAFT AND EQUIPMENT

4.1. AIRCRAFT

A Eurocopter (Aerospatiale) AS350 BA "A-Star" helicopter - registration C-FWEN was used as survey platform. The helicopter was owned and operated by Wendake, Québec City. Installation of the geophysical and ancillary equipment was carried out by Aeroquest Limited personnel in conjunction with a licensed aircraft engineer. The survey aircraft was flown at a nominal terrain clearance of 270 ft (82 metres).



Figure 3. Helicopter C-FWEN used as survey platform

4.2. MAGNETOMETER

The Aeroquest airborne survey system employs the Geometrics G-823A caesium vapour magnetometer sensor installed in a two metre towed bird airfoil attached to the main tow line, 21 metres below the helicopter (Figure 4). The sensitivity of the magnetometer is 0.001

nanoTesla at a 0.1 second sampling rate. The nominal ground clearance of the magnetometer bird is 61 metres (200 ft.). The magnetic data is recorded at 10 Hz by the RMS DGR-33.

4.3. ELECTROMAGNETIC SYSTEM

The electromagnetic system is an Aeroquest AeroTEM IV time domain towed-bird system (Figure 4). The current AeroTEM IV transmitter dipole moment is from 230 kNIA. The AeroTEM bird is towed 52 metres (170 ft) below the helicopter. More technical details of the system may be found in Appendix 4.

The wave-form is triangular with a symmetric transmitter on-time pulse of 1250 μ s and a base frequency of 90 Hz (Figure 5). The current alternates polarity every on-time pulse. During every Tx on-off cycle (180 per second), 200 contiguous channels of raw X and Z component (and a transmitter current monitor, itx) of the received waveform are measured. The channel time widths are defined in Section 4.4 below. This 200 channel data is referred to as the raw streaming data. The AeroTEM system has two separate EM data recording streams, the conventional RMS DGR-33 and the AeroDAS system which records the full waveform (Figure 5).

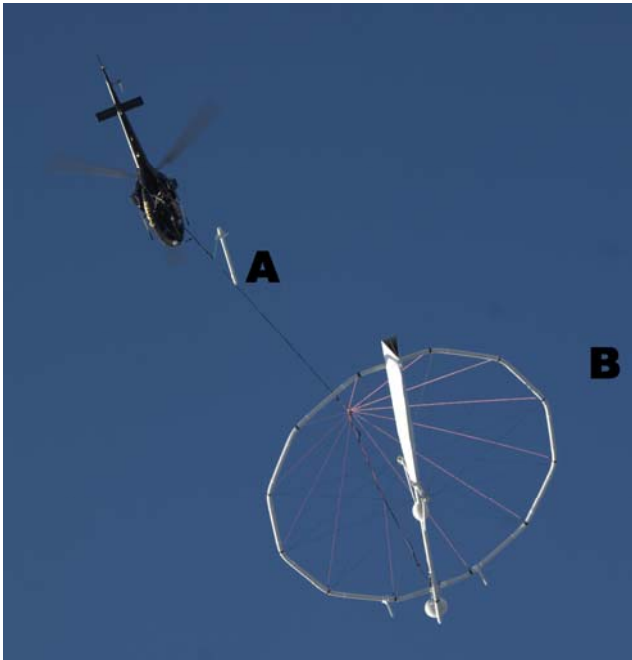


Figure 4. The magnetometer bird (A) and AeroTEM IV EM bird (B)

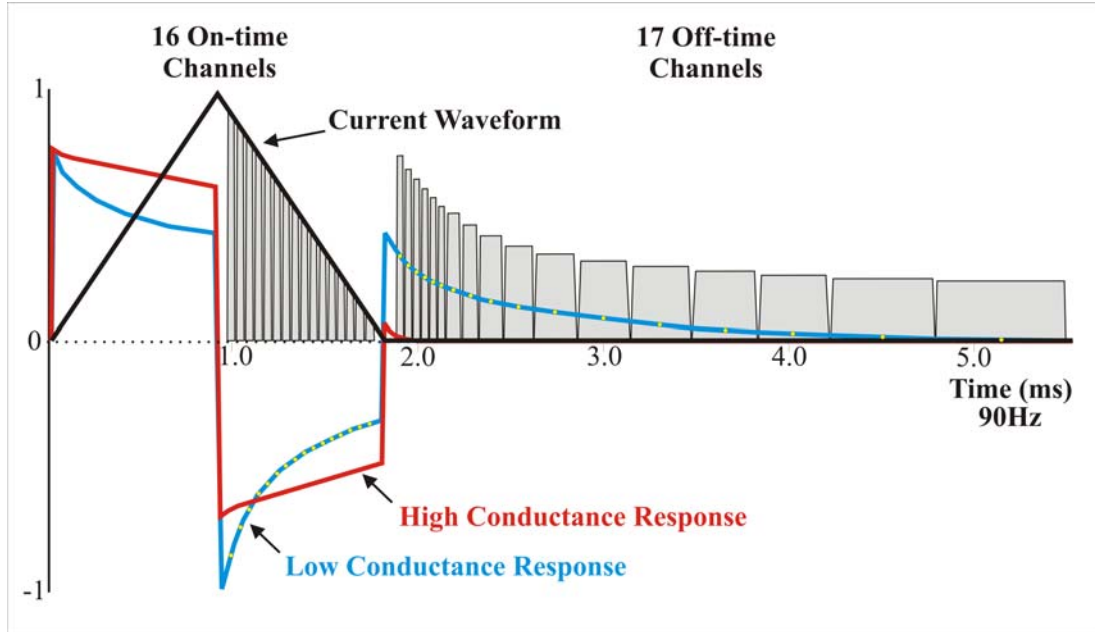


Figure 5. Schematic of Transmitter and Receiver waveforms

4.4. AERODAS ACQUISITION SYSTEM

The 120 channels of raw streaming data are recorded by the AeroDAS acquisition system (Figure 6) onto a removable hard drive. The streaming data are processed post-survey to yield 33 stacked and binned on-time and off-time channels at a 10 Hz sample rate. The timing of the final processed EM channels is described in the following table:

Average TxOn -14.4972 us
Average TxSwitch 990.7626 us
Average TxOff 1914.8958 us

Channel	Sample Range	Time Width (us)	Time Center (us)	Time After TxOn (us)
On1	2 - 2	27.778	41.667	56.164
On2	3 - 3	27.778	69.444	83.942
On3	4 - 4	27.778	97.222	111.719
On4	5 - 5	27.778	125.000	139.497
On5	6 - 6	27.778	152.778	167.275
On6	7 - 7	27.778	180.556	195.053
On7	8 - 8	27.778	208.333	222.831
On8	9 - 9	27.778	236.111	250.608
On9	10 - 10	27.778	263.889	278.386
On10	11 - 11	27.778	291.667	306.164
On11	12 - 12	27.778	319.444	333.942
On12	13 - 13	27.778	347.222	361.719
On13	14 - 14	27.778	375.000	389.497
On14	15 - 15	27.778	402.778	417.275
On15	16 - 16	27.778	430.556	445.053
On16	17 - 17	27.778	458.333	472.831

Channel	Sample Range	Time Width (us)	Time Center (us)	Time After TxOff (us)
Off0	72 - 72	27.778	1986.111	71.215
Off1	73 - 73	27.778	2013.889	98.993
Off2	74 - 74	27.778	2041.667	126.771
Off3	75 - 75	27.778	2069.444	154.549
Off4	76 - 76	27.778	2097.222	182.326
Off5	77 - 77	27.778	2125.000	210.104
Off6	78 - 80	83.333	2180.556	265.660
Off7	81 - 83	83.333	2263.889	348.993
Off8	84 - 86	83.333	2347.222	432.326
Off9	87 - 89	83.333	2430.556	515.660
Off10	90 - 94	138.889	2541.667	626.771
Off11	95 - 99	138.889	2680.556	765.660
Off12	100 - 105	166.667	2833.333	918.438
Off13	106 - 114	250.000	3041.667	1126.771
Off14	115 - 128	388.889	3361.111	1446.215
Off15	129 - 150	611.111	3861.111	1946.215
Off16	151 - 184	944.444	4638.889	2723.993

4.5. RMS DGR-33 ACQUISITION SYSTEM

In addition to the magnetics, altimeter and position data, six channels of real time processed off-time EM decay in the Z direction and one in the X direction are recorded by the RMS DGR-33 acquisition system at 10 samples per second and plotted real-time on the analogue chart recorder. These channels are derived by a binning, stacking and filtering procedure on the raw streaming data. The primary use of the RMS EM data (Z1 to Z6, X1) is to provide for real-time QA/QC on board the aircraft.

The channel window timing of the RMS DGR-33 6 channel system is described in the table below.

RMS Channel	Start time (µs)	End time (µs)	Width (µs)	Streaming Channels
Z1, X1	1269.8	1322.8	52.9	48-50
Z2	1322.8	1455.0	132.2	50-54
Z3	1428.6	1587.3	158.7	54-59
Z4	1587.3	1746.0	158.7	60-65
Z5	1746.0	2063.5	317.5	66-77
Z6	2063.5	2698.4	634.9	78-101



Figure 6. AeroTEM IV Instrument Rack

4.6. MAGNETOMETER BASE STATION

The base magnetometer was a Geometrics G-859 caesium vapour magnetometer system with integrated GPS. Data logging and UTC time synchronisation was carried out within the magnetometer, with the GPS providing the timing signal. The data logging was configured to measure at 1.0 second intervals. Digital recording resolution was 0.001 nT. The sensor was placed on a tripod in an area of low magnetic gradient and free of cultural noise sources. A continuously updated display of the base station values was available for viewing and regularly monitored to ensure acceptable data quality and diurnal variation.

4.7. RADAR ALTIMETER

A Terra TRA 3500/TRI-30 radar altimeter is used to record terrain clearance. The antenna was mounted on the outside of the helicopter beneath the cockpit. Therefore, the recorded data reflect the height of the helicopter above the ground. The Terra altimeter has an altitude accuracy of +/- 1.5 metres.

4.8. VIDEO TRACKING AND RECORDING SYSTEM

A high resolution digital colour 8 mm video camera is used to record the helicopter ground flight path along the survey lines. The video is digitally annotated with GPS position and time

and can be used to verify ground positioning information and cultural causes of anomalous geophysical responses.



Figure 7. Digital video camera typical mounting location

4.9. GPS NAVIGATION SYSTEM

The navigation system consists of an Ag-Nav Incorporated AG-NAV2 GPS navigation system comprising a PC-based acquisition system, navigation software, a deviation indicator in front of the aircraft pilot to direct the flight, a full screen display with controls in front of the operator, a Mid-Tech RX400p WAAS-enabled GPS receiver mounted on the instrument rack and an antenna mounted on the magnetometer bird. WAAS (Wide Area Augmentation System) consists of approximately 25 ground reference stations positioned across the United States that monitor GPS satellite data. Two master stations located on the east and west coasts collect data from the reference stations and create a GPS correction message. This correction accounts for GPS satellite orbit and clock drift plus signal delays caused by the atmosphere and ionosphere. The corrected differential message is then broadcast through one of two geostationary satellites, or satellites with a fixed position over the equator. The corrected position has a published accuracy of less than 3 metres.

Survey co-ordinates are set up prior to the survey and the information is fed into the airborne navigation system. The co-ordinate system employed in the survey design was WGS84 [World] using the UTM zone 17N projection. The real-time differentially corrected GPS positional data was recorded by the RMS DGR-33 in geodetic coordinates (latitude and longitude using WGS84) at 0.2 s intervals.

4.10. DIGITAL ACQUISITION SYSTEM

The AeroTEM received waveform sampled during on and off-time at 120 channels per decay, 180 times per second, was logged by the proprietary AeroDAS data acquisition system. The channel sampling commences at the start of the Tx cycle and the width of each channel is 27.78 seconds. The streaming data was recorded on a removable hard-drive and was later backed-up onto DVD-ROM from the field-processing computer.

The RMS Instruments DGR33A data acquisition system was used to collect and record the analogue data stream, i.e. the positional and secondary geophysical data, including processed 6 channel EM, magnetics, radar altimeter, GPS position, and time. The data was recorded on 128 Mb capacity FlashCard. The RMS output was also directed to a thermal chart recorder.

5. PERSONNEL

The following Aeroquest personnel were involved in the project:

- Manager of Operations: Troy Will
- Manager of Data Processing: Gord Smith
- Field Data Processor(s): Jonathon Yantho, Ali Latrous
- Field Operator(s): Claude Goulet, Joel Black, Christophe Comina
- Data Interpretation and Reporting: Geoff Plastow, Liz Johnson

The survey pilots, Pierre Henault, and Antoine Desrosiers, were employed directly by the helicopter operator – Wendake Helicopters.

6. DELIVERABLES

6.1. HARDCOPY DELIVERABLES

The report includes a set of four 1:10,000 maps. The survey area is covered by two map plates and three geophysical data products are delivered as listed below:

- TMI – Coloured Total Magnetic Intensity (TMI) with line contours and EM anomaly symbols.
- ZOFF1 – AeroTEM Z1 Off-time with line contours and EM anomaly symbols.
- EM – AeroTEM off-time profiles and EM anomaly symbols.

The coordinate/projection system for the maps is NAD27 – UTM Zone 17N. For reference, the latitude and longitude in WGS84 are also noted on the maps.

All the maps show flight path trace, skeletal topography, and conductor picks represented by an anomaly symbol classified according to calculated on-time conductance. The anomaly symbol is accompanied by postings denoting the calculated off-time conductance, a thick or thin classification and an anomaly identifier label. The anomaly symbol legend is given in the margin of the maps. The magnetic field data is presented as superimposed line contours with a minimum contour interval of 5 nT.

6.2. DIGITAL DELIVERABLES

6.2.1. Final Database of Survey Data (.GDB, .XYZ)

The geophysical profile data is archived digitally in a Geosoft GDB binary format database. A description of the contents of the individual channels in the database can be found in Appendix 2. A copy of this digital data is archived at the Aeroquest head office in Mississauga.

6.2.2. Geosoft Grid files (.GRD)

Levelled Grid products used to generate the geophysical map images. Cell size for all grid files is 20 metres.

- Total Magnetic Intensity (08093_TMI)
- AeroTEM Z Offtime Channel 1 (08093_ZOff[1])

6.2.3. Digital Versions of Final Maps (.MAP, .PDF)

Map files in Geosoft .map and Adobe PDF format.

6.2.4. Google Earth Survey Files (.kmz)

Flight navigation lines, EM anomalies, EM Profiles, geophysical grids and contours in Google earth KMZ format. Double click to view flight lines in Google Earth.

6.2.5. Free Viewing Software (.EXE)

- Geosoft Oasis Montaj Viewing Software
- Adobe Acrobat Reader
- Google Earth Viewer

6.2.6. Digital Copy of this Document (.PDF)

Adobe PDF format of this document.

7. DATA PROCESSING AND PRESENTATION

All in-field and post-field data processing was carried out using Aeroquest proprietary data processing software and Geosoft Oasis Montaj software. Maps were generated using 36-inch wide Hewlett Packard ink-jet plotters.

7.1. BASE MAP

The geophysical maps accompanying this report are based on positioning in the NAD27 datum. The survey geodetic GPS positions have been projected using the Universal Transverse Mercator projection in Zone 17 North. A summary of the map datum and projection specifications is given following:

- Ellipse: GRS 1980
- Ellipse major axis: 6378206.4m eccentricity: 0.082271854
- Datum: North American 1927 - Canada Mean
- Datum Shifts (x,y,z) : 0, 0, 0 metres
- Map Projection: Universal Transverse Mercator Zone 17 (Central Meridian 87°W)
- Central Scale Factor: 0.9996
- False Easting, Northing: 500,000m, 0m

For reference, the latitude and longitude in WGS84 are also noted on the maps.

The background vector topography was derived from Natural Resources Canada 1:50000 National Topographic Database data and the background shading were derived from NASA Shuttle Radar Topography Mission (SRTM) 90 metres resolution DEM data.

7.2. FLIGHT PATH & TERRAIN CLEARANCE

The position of the survey helicopter was directed by use of the Global Positioning System (GPS). Positions were updated five times per second (5 Hz) and expressed as WGS84 latitude and longitude calculated from the raw pseudo range derived from the C/A code signal. The instantaneous GPS flight path, after conversion to UTM co-ordinates, is drawn using linear interpolation between the x/y positions. The terrain clearance was maintained with reference to the radar altimeter. The raw Digital Terrain Model (DTM) was derived by taking the GPS survey elevation and subtracting the radar altimeter terrain clearance values. The calculated topography elevation values are relative and are not tied in to surveyed geodetic heights.

Each flight included at least two high elevation ‘background’ checks. These high elevation checks are to ensure that the gain of the system remained constant and within specifications.

7.3. ELECTROMAGNETIC DATA

The raw streaming data, sampled at a rate of 36,000 Hz (200 channels) was reprocessed using a proprietary software algorithm developed and owned by Aeroquest Limited. Processing involves the compensation of the X and Z component data for the primary field waveform. Coefficients for this compensation for the system transient are determined and applied to the stream data. The stream data are then pre-filtered, stacked, binned to the 33 on and off-time channels and checked for the effectiveness of the compensation and stacking processes. The stacked data is then filtered, levelled and split up into the individual line segments. Further base level adjustments may be carried out at this stage.

The final field processing step was to merge the processed EM data with the other data sets into a Geosoft GDB file. The EM fiducial is used to synchronize the two datasets. The processed channels are merged into ‘array format; channels in the final Geosoft database as Zon, Zoff, Xon, and Xoff

The filtering of the stacked data is designed to remove or minimize high frequency noise that can not be sourced from the geology. Apparent bedrock EM anomalies were interpreted with the aid of an auto-pick from positive peaks and troughs in the on-time Z channel responses correlated with X channel responses. The auto-picked anomalies were reviewed and edited by a geophysicist on a line by line basis to discriminate between thin and thick conductor types. Anomaly picks locations were migrated and removed as required. This process ensures the optimal representation of the conductor centres on the maps.

At each conductor pick, estimates of the off-time conductance have been generated based on a horizontal plate source model for those data points along the line where the response amplitude is sufficient to yield an acceptable estimate. Some of the EM anomaly picks do not display a Tau value; this is due to the inability to properly define the decay of the conductor usually because of low signal amplitudes. Each conductor pick was then classified according to a set of seven ranges of calculated off-time conductance values. For high conductance sources, the on-time conductance values may be used, since it provides a more accurate measure of high-conductance sources. Each symbol is also given an identification letter label, unique to each flight line. Conductor picks that did not yield an acceptable estimate of off-time conductance due to a low amplitude response were classified as a low conductance source. Please refer to the anomaly symbol legend located in the margin of the maps.

7.4. MAGNETIC DATA

Prior to any levelling the magnetic data was subjected to a lag correction of -0.1 seconds and a spike removal filter. The filtered aeromagnetic data were then corrected for diurnal variations using the magnetic base station and the intersections of the tie lines. No corrections for the regional reference field (IGRF) were applied. The corrected profile data were interpolated on to a grid using bi-directional gridding with a grid cell size of 20 metres. The final levelled grid provided the basis for threading the presented contours which have a minimum contour interval of 5 nT.

8. GENERAL COMMENTS

The survey was successful in mapping the magnetic and conductive properties of the geology throughout the survey area. Below is a brief interpretation of the results. For a detailed interpretation please contact Aeroquest Limited.

8.1. MAGNETIC RESPONSE

The magnetic data provide a high resolution map of the distribution of the magnetic mineral content of the survey area. This data can be used to interpret the location of geological contacts and other structural features such as faults and zones of magnetic alteration. The sources for anomalous magnetic responses are generally thought to be predominantly magnetite because of the relative abundance and strength of response (high magnetic susceptibility) of magnetite over other magnetic minerals such as pyrrhotite.

8.2. EM ANOMALIES

The EM anomalies on the maps are classified by conductance (as described earlier in the report) and also by the thickness of the source. A thin, vertically orientated source produces a double peak anomaly in the z-component response and a positive to negative crossover in the x-component response (Figure 8). For a vertically orientated thick source (say, greater than 10 metres), the response is a single peak in the z-component response and a negative to positive crossover in the x-component response (Figure 9). Because of these differing responses, the AeroTEM system provides discrimination of thin and thick sources and this distinction is indicated on the EM anomaly symbols (N = thin and K = thick). Where multiple, closely spaced conductive sources occur, or where the source has a shallow dip, it can be difficult to uniquely determine the type (thick vs. thin) of the source (Figure 10). In these cases both possible source types may be indicated by picking both thick and thin response styles. For shallow dipping conductors the 'thin' pick will be located over the edge of the source, whereas the 'thick' pick will fall over the downdip 'heart' of the anomaly.

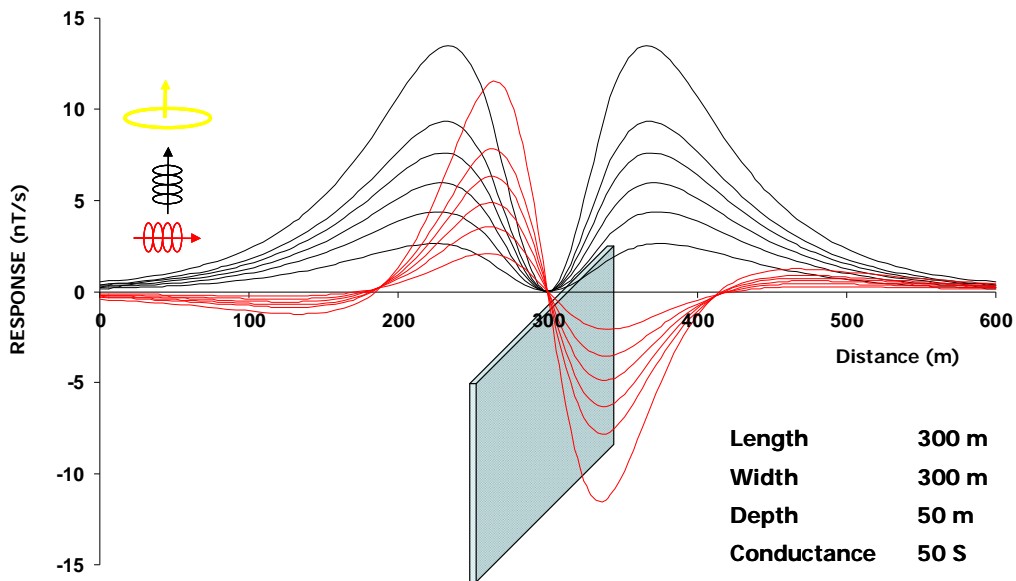


Figure 8. AeroTEM response to a 'thin' vertical conductor

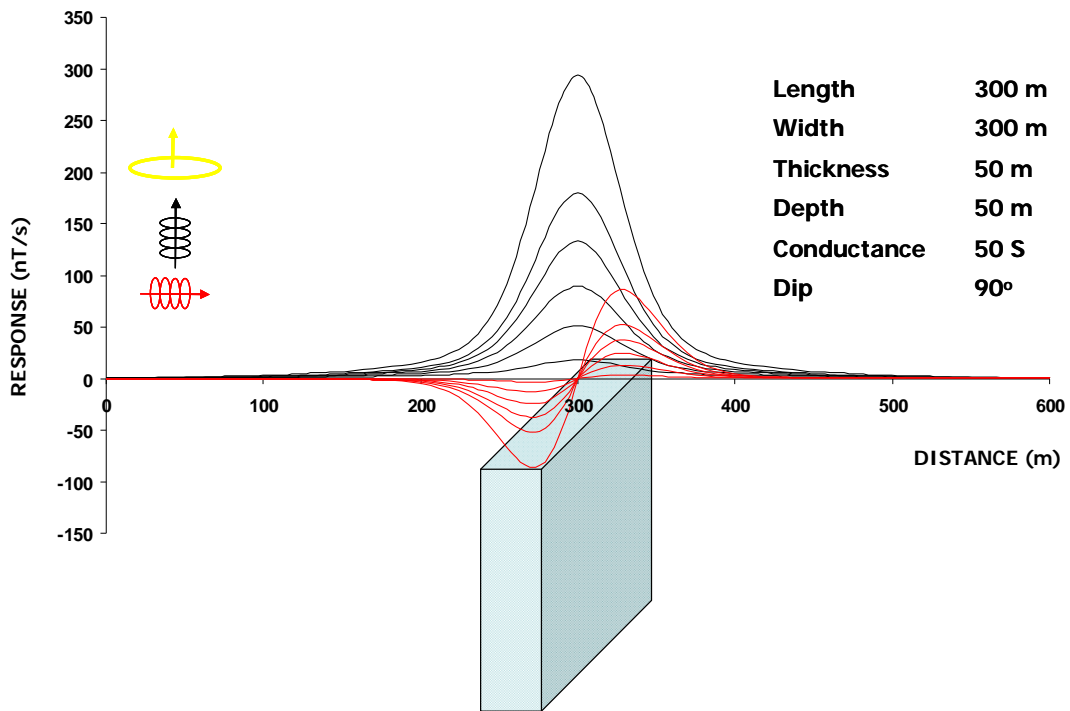


Figure 9. AeroTEM response for a 'thick' vertical conductor

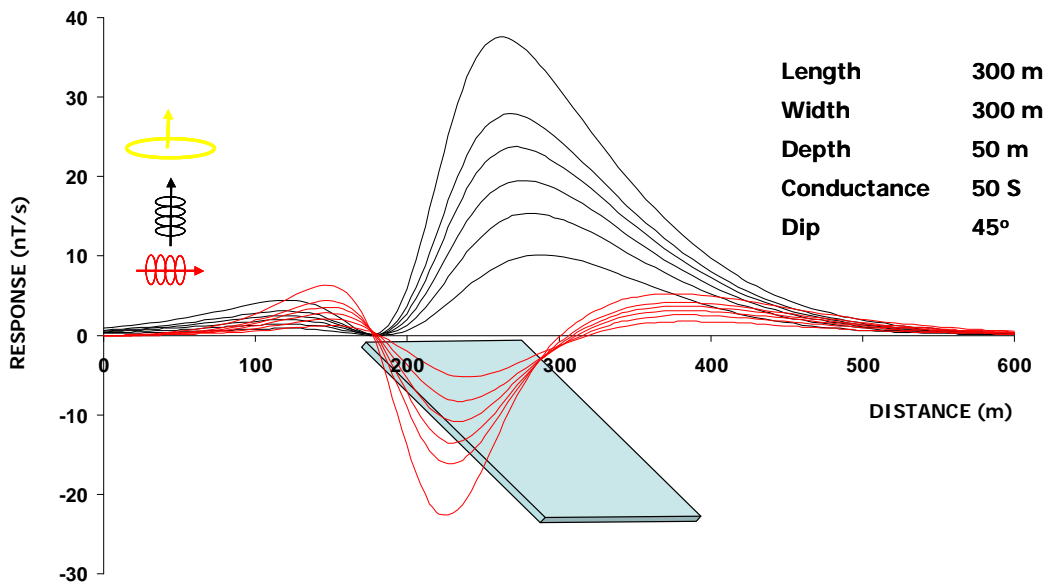


Figure 10. AeroTEM response over a 'thin' dipping conductor

All cases should be considered when analyzing the interpreted picks and prioritizing for follow-up. Specific anomalous responses which remain as high priority should be subjected to numerical modeling prior to drill testing to determine the dip, depth and probable geometry of the source.



Respectfully submitted,

Geoff Plastow,
Aeroquest Limited
September, 2008

Reviewed by:

Gord Smith,
Aeroquest Limited
September, 2008

APPENDIX 1: SURVEY BOUNDARIES

The following table presents the Insight block boundaries. All geophysical data presented in this report have been windowed to 100m outside these outlines. X and Y positions are in NAD27 UTM Zone 17N.

Block A

X	Y
597811.46	5225933.14
599039.39	5225894.77
599039.39	5222729.08
597231.42	5222693.45
597350.98	5218297.14
593225.92	5218316.33
593245.11	5228120.34
591307.29	5228139.52
591347.93	5230140.82
587450.83	5230134.85
587470.01	5233549.95
597830.64	5233530.77
597811.46	5225933.14
594274.50	5227635.99

Block B - Infill

X	Y
594274.50	5230753.02
595717.57	5230753.02
595717.57	5227635.99
594274.50	5227635.99

APPENDIX 2: MINING CLAIMS

CLAIM	PROPERTY	DATE DUE	Area (Ha)
1203053	Brett	2008-Oct-11	101.968
1203054	Brett	2008-Oct-11	155.339
3008957	Brett	2009-Mar-25	23.6487
3008958	Brett	2009-Mar-25	1.97878
3011783	Brett	2009-Mar-25	114.737
3011794	Brett	2009-Mar-25	249.577
3011795	Brett	2009-Mar-25	30.4074
3011797	Brett	2009-Mar-25	249.067
3011807	Brett	2009-Mar-25	248.461
3013786	Brett	2009-Feb-25	257.082
3013787	Brett	2009-Feb-25	87.462
3013788	Brett	2009-Feb-25	83.7237
3013791	Brett	2009-Feb-25	249.179
3013792	Brett	2009-Feb-25	182.506
3013795	Brett	2009-Feb-25	255.068
3013796	Brett	2009-Feb-25	189.801
3013797	Brett	2009-Feb-25	73.7612
3013798	Brett	2009-Feb-25	47.4691
3013799	Brett	2009-Feb-25	188.748
3013800	Brett	2009-Feb-25	83.4165
3018979	Brett	2008-Dec-12	254.064
3018980	Brett	2008-Dec-12	249.801
3018981	Brett	2008-Dec-12	140.849
3018982	Brett	2008-Dec-12	264.437
3018983	Brett	2008-Dec-12	230.955
3018984	Brett	2008-Dec-12	188.413
4206344	Brett	2009-May-29	17.7558
4206345	Brett	2008-Aug-08	97.0212
1197742	Caniptau	2009-Jul-05	10.4077
1212012	Caniptau	2008-Oct-23	66.6225
3003906	Caniptau	2008-Oct-04	115.364
3004214	Caniptau	2009-Mar-13	32.1251
3004822	Caniptau	2009-Feb-07	60.5272
4225674	Caniptau	2010-May-10	61.6138
3008944	Caniptau	2009-Feb-26	35.8496
3008945	Caniptau	2009-Feb-26	37.2741
3008946	Caniptau	2009-Feb-26	63.6898

CLAIM	PROPERTY	DATE DUE	Area (Ha)
3009764	Caniptau	2009-Mar-03	31.5394
3009765	Caniptau	2009-Feb-12	16.3277
3009766	Caniptau	2009-Feb-12	19.5018
3010843	Caniptau	2009-Mar-03	44.569
3010844	Caniptau	2009-Mar-03	1.92782
3018987	Caniptau	2008-Nov-20	158.382
3018988	Caniptau	2008-Nov-20	246.854
4221758	Caniptau	2010-Mar-25	59.457
4225671	Caniptau	2010-Feb-20	16.0596
4225672	Caniptau	2010-Feb-20	67.0157
4225673	Caniptau	2010-Feb-20	87.835
4206346	Castle	2009-May-15	185.007
4206347	Castle	2009-May-15	136.195
4206348	Castle	2009-May-15	142.735
4206349	Castle	2009-May-15	142.508
3007564	Ram	2009-Apr-19	126.485
4243261	Ram	2010-May-08	173.803
4243260	Ram	2010-May-08	126.654
4243259	Ram	2010-May-08	129.598
3008949	Ram	2009-Mar-15	8.26354
3008950	Ram	2009-Mar-15	259.49
3008951	Ram	2009-Mar-15	160.057
3008952	Ram	2009-Mar-15	43.2404
3008953	Ram	2009-Mar-15	91.3835
3008954	Ram	2009-Mar-15	44.3535
3018307	Ram	2010-Mar-25	74.4164
1219926	Rib Lake	2008-Oct-24	15.7766
1219933	Rib Lake	2008-Oct-24	16.4373
1221578	Rib Lake	2008-Sep-24	30.3711
1231136	Rib Lake	2008-Sep-24	65.7833
1231137	Rib Lake	2008-Oct-08	68.7726
1231138	Rib Lake	2008-Sep-24	64.0792
1231139	Rib Lake	2008-Sep-24	66.1823
1249728	Rib Lake	2008-Sep-24	43.5459
1249729	Rib Lake	2009-Sep-24	64.2987
3000410	Rib Lake	2008-Dec-17	158.536
3000411	Rib Lake	2008-Dec-17	146.771

APPENDIX 3: AEROTEM ANOMALY LISTING

Line	Anom	ID	Cond (S)	Tau (µs)	Flight #	UTC Time	Bird height (m)	Easting (m)	Northing (m)
10050	A	K	1.1	105.6	38	12:21:07	57.9	587913.4	5233383.0
10150	A	K	3.7	193.1	4	15:59:07	40.9	588923.1	5231571.6
10160	A	K	2.7	165.5	38	11:57:17	52.5	589004.9	5231524.3
10170	A	K	4.4	210.4	4	16:08:08	36.6	589113.1	5231601.8
10320	A	K	60.2	775.8	5	18:56:11	47.6	590605.4	5231540.9
10330	A	K	11.3	336.3	37	15:12:15	62.3	590696.4	5232519.8
10340	A	K	1.8	135.4	5	19:05:55	44.3	590808.3	5231678.5
10390	A	K	5.1	225.0	37	14:59:41	47.3	591328.4	5232357.8
10400	A	K	14.2	376.9	6	21:01:24	41.1	591409.6	5231893.5
10420	A	K	83.9	916.0	6	21:19:21	50.0	591608.6	5231220.5
10430	A	K	3.4	184.4	37	14:49:48	65.3	591728.9	5231807.8
10440	A	K	0.9	96.2	6	21:32:10	48.3	591805.8	5231283.0
10680	A	N	16.8	409.2	35	14:56:22	38.9	594221.1	5233155.0
10680	B	K	16.8	409.2	35	14:56:24	37.6	594219.7	5233190.4
10680	C	N	32.6	570.7	35	14:56:48	57.3	594222.4	5233618.4
10690	A	N	2.9	169.0	34	13:03:30	42.6	594303.6	5233072.7
10690	B	K	2.9	169.0	34	13:03:35	48.1	594299.4	5233144.8
10690	C	K	49.8	705.4	34	13:04:00	47.8	594337.1	5233513.1
10700	A	K	42.0	648.1	34	12:40:27	41.7	594372.8	5233521.6
10700	B	N	133.6	1155.8	34	12:40:49	66.0	594497.8	5233166.9
10700	C	K	133.6	1155.8	34	12:40:51	64.1	594493.7	5233123.1
10710	A	N	41.4	643.1	34	12:29:51	50.3	594527.9	5222820.9
10710	B	K	65.1	806.7	34	12:39:05	47.2	594539.1	5233068.7
10720	A	K	56.5	751.4	34	12:16:40	68.6	594603.5	5232855.6
10720	B	K	27.0	519.7	34	12:18:37	60.6	594635.4	5229514.0
10720	C	N	6.7	259.5	34	12:22:21	62.1	594616.0	5222896.7
10730	A	N	52.4	724.1	34	12:06:24	43.4	594708.2	5222981.2
10730	B	K	93.0	964.3	34	12:11:57	59.3	594717.0	5229493.4
10730	C	K	32.7	571.4	34	12:14:30	47.8	594703.2	5232629.4
10730	D	K	15.8	397.6	34	12:14:41	47.3	594710.4	5232845.3
10730	E	N	15.8	397.6	34	12:14:44	49.6	594713.2	5232909.1
10740	A	N	67.3	820.1	34	11:54:05	45.5	594808.8	5232542.9
10740	B	K	44.2	664.7	34	11:55:47	48.6	594803.9	5229427.1
10740	C	N	80.9	899.2	34	11:59:12	61.5	594813.3	5223218.8
10750	A	N	97.1	985.5	33	21:30:39	44.9	594913.4	5223353.7
10750	B	K	5.0	222.7	33	21:36:23	39.3	594917.9	5229411.1
10750	C	N	86.7	931.1	33	21:39:31	48.3	594912.2	5232429.9

Line	Anom	ID	Cond (S)	Tau (µs)	Flight #	UTC Time	Bird height (m)	Easting (m)	Northing (m)
10760	A	N	77.0	877.6	31	15:02:49	58.4	595018.0	5223487.1
10760	B	K	46.1	678.7	31	15:06:20	68.1	594999.8	5228338.8
10760	C	K	6.6	256.0	31	15:07:05	53.8	595008.2	5229359.0
10760	D	N	44.7	668.6	31	15:09:19	51.4	595014.6	5232316.5
10770	A	N	139.1	1179.6	31	14:49:06	54.3	595126.5	5232212.5
10770	B	K	221.1	1486.9	31	14:50:56	72.8	595116.1	5229283.3
10770	C	K	17.5	418.0	31	14:53:51	63.0	595121.3	5224875.6
10770	D	K	152.0	1232.7	31	14:54:14	62.9	595104.2	5224326.3
10770	E	N	17.2	414.1	31	14:54:49	65.9	595103.2	5223511.3
10780	A	N	16.4	404.5	31	14:40:18	61.0	595211.9	5223688.2
10780	B	K	31.9	564.8	31	14:40:48	60.6	595214.0	5224343.3
10780	C	N	13.2	362.7	31	14:40:52	59.5	595214.7	5224441.9
10780	D	K	13.2	362.7	31	14:40:54	59.7	595216.0	5224504.2
10780	E	K	12.2	349.8	31	14:41:03	60.5	595223.9	5224704.8
10780	F	N	66.0	812.2	31	14:44:16	58.6	595207.6	5229238.8
10780	G	N	37.4	611.5	31	14:46:27	54.8	595210.6	5232183.1
10790	A	N	59.6	772.3	31	14:26:26	72.2	595307.0	5232104.1
10790	B	K	474.9	2179.2	31	14:28:22	74.9	595331.0	5229262.8
10790	C	N	474.9	2179.2	31	14:28:24	73.3	595331.1	5229213.4
10790	D	N	62.9	792.8	31	14:31:13	58.6	595301.9	5224829.6
10790	E	K	23.6	486.0	31	14:31:27	60.6	595310.2	5224456.9
10790	F	K	25.9	509.3	31	14:31:53	55.2	595308.9	5223756.7
10790	G	N	12.9	359.7	31	14:32:07	66.0	595317.6	5223383.8
10800	A	K	6.8	261.0	31	14:17:42	68.2	595411.5	5223421.3
10800	B	N	3.1	174.7	31	14:17:57	56.5	595414.0	5223801.5
10800	C	K	3.1	174.7	31	14:18:01	59.3	595415.9	5223903.3
10800	D	K	31.8	563.5	31	14:18:58	71.1	595431.1	5225261.8
10800	E	N	2.5	158.8	31	14:21:43	61.9	595416.7	5229223.4
10800	F	K	2.5	158.8	31	14:21:45	60.2	595415.2	5229264.6
10800	G	N	87.3	934.5	31	14:23:42	62.3	595410.6	5232103.0
10810	A	N	128.0	1131.4	31	14:05:00	69.9	595512.4	5232033.0
10810	B	K	7.3	270.9	31	14:06:43	59.0	595510.6	5229215.8
10810	C	K	26.8	518.1	31	14:09:08	72.3	595509.6	5225239.1
10810	D	N	11.7	342.1	31	14:09:46	69.1	595514.0	5224240.9
10810	E	K	11.7	342.1	31	14:09:50	67.4	595517.9	5224141.6
10820	A	N	15.5	393.7	30	14:12:56	68.9	595621.0	5224342.6
10820	B	K	16.6	407.2	30	14:12:59	66.6	595621.9	5224411.4
10820	C	K	101.8	1009.0	30	14:17:07	68.4	595598.5	5231935.8
10830	A	N	50.4	709.7	30	13:54:28	56.2	595711.3	5231822.6

Line	Anom	ID	Cond (S)	Tau (µs)	Flight #	UTC Time	Bird height (m)	Easting (m)	Northing (m)
10830	B	K	20.2	449.4	30	13:54:47	59.8	595706.2	5231507.9
10830	C	K	27.5	524.4	30	13:55:13	63.8	595730.0	5231074.6
10830	D	N	27.5	524.4	30	13:55:20	63.2	595727.2	5230962.7
10831	A	K	3.1	175.1	30	14:01:08	65.2	595749.2	5225168.4
10831	B	N	40.8	638.4	30	14:01:54	51.9	595704.2	5224466.6
10831	C	K	40.8	638.4	30	14:01:58	57.3	595714.4	5224407.1
10840	C	K	36.4	602.9	29	22:03:11	59.6	595820.3	5231627.6
10840	D	N	36.4	602.9	29	22:03:15	59.7	595814.3	5231513.6
10840	E	N	58.6	765.2	29	22:03:45	50.3	595824.3	5230777.8
10840	F	N	2.8	166.6	29	22:07:34	67.4	595809.4	5225262.0
10840	G	K	2.8	166.6	29	22:07:37	66.8	595813.7	5225203.3
10840	H	N	265.1	1628.3	29	22:08:07	53.6	595792.6	5224524.2
10850	A	N	63.0	793.5	29	21:55:11	60.8	595910.9	5224626.8
10860	A	N	15.4	392.8	29	21:44:14	59.0	596004.0	5226491.4
10860	B	K	15.4	392.8	29	21:44:17	56.7	596001.6	5226419.5
10860	C	K	80.2	895.3	29	21:44:33	51.4	596000.7	5226038.2
10860	D	K	2.7	165.1	29	21:45:31	53.0	595986.6	5224589.3
10860	E	N	2.7	165.1	29	21:45:34	47.6	595981.6	5224511.8
10870	A	N	1.7	131.2	29	21:32:59	55.6	596110.0	5224644.8
10870	B	K	1.7	131.2	29	21:33:01	55.5	596111.4	5224713.5
10870	C	K	638.3	2526.5	29	21:34:17	52.2	596125.7	5226603.0
10870	D	N	638.3	2526.5	29	21:34:19	52.0	596125.7	5226668.4
10870	E	N	120.5	1097.9	29	21:35:52	51.6	596125.6	5228955.6
10870	F	K	120.5	1097.9	29	21:35:54	51.3	596128.3	5229010.1
10870	G	N	12.7	356.3	29	21:36:43	70.0	596099.4	5230293.3
10880	A	K	142.5	1193.5	29	21:20:13	57.9	596212.9	5230172.7
10880	B	N	142.5	1193.5	29	21:20:18	54.4	596211.5	5230019.9
10880	C	K	22.6	475.2	29	21:20:56	60.5	596213.8	5228965.6
10880	D	N	22.6	475.2	29	21:20:59	62.7	596215.9	5228906.0
10880	E	N	0.8	86.5	29	21:22:26	55.8	596207.3	5226680.0
10880	F	K	0.8	86.5	29	21:22:29	52.1	596206.1	5226616.1
10890	A	K	1.2	110.7	29	21:13:01	73.1	596336.8	5226746.2
10890	B	N	41.7	645.9	29	21:14:32	45.9	596293.5	5228947.4
10890	C	K	41.7	645.9	29	21:14:35	46.6	596289.8	5229012.0
10900	A	K	0.1	36.0	29	20:58:29	55.8	596407.3	5230998.5
10900	B	N	1.1	105.4	29	21:00:16	48.4	596419.2	5228436.8
10900	C	K	25.2	502.2	29	21:01:07	54.8	596403.1	5227037.4
10921	A	K	152.5	1235.0	28	19:35:27	57.9	596605.6	5227423.6
10931	A	K	260.4	1613.8	28	19:21:51	60.8	596717.9	5227492.8

Line	Anom	ID	Cond (S)	Tau (µs)	Flight #	UTC Time	Bird height (m)	Easting (m)	Northing (m)
10931	B	N	260.4	1613.8	28	19:21:53	63.0	596718.7	5227451.4
10931	C	K	76.5	874.6	28	19:21:55	67.1	596719.3	5227399.0
10931	D	N	82.2	906.6	28	19:22:17	68.6	596714.4	5226825.9
10941	A	K	72.1	849.1	28	19:18:04	67.0	596810.9	5227462.5
10941	B	N	72.1	849.1	28	19:18:06	66.8	596808.7	5227513.6
10941	C	K	142.7	1194.6	28	19:18:10	65.0	596807.0	5227585.8
10960	A	K	82.3	907.4	27	15:54:31	59.4	597012.1	5225480.3
10980	A	K	27.6	525.2	27	15:37:05	54.3	597218.5	5226678.3
10980	B	K	18.7	432.5	27	15:37:37	53.4	597211.3	5227361.4
10990	A	K	2.6	160.7	27	15:22:13	73.0	597308.3	5227963.4
10990	B	K	1.9	137.9	27	15:23:00	69.7	597313.3	5226717.2
10990	C	N	19.7	443.4	27	15:23:07	70.3	597330.1	5226516.2
10990	D	N	19.7	443.4	27	15:23:10	73.6	597330.4	5226443.0
11000	A	K	4.3	208.4	27	15:18:16	72.9	597423.1	5225428.0
11000	B	K	280.3	1674.3	27	15:19:18	47.5	597406.6	5226678.3
11000	C	K	5.0	223.8	27	15:19:45	53.3	597401.0	5227258.2
11000	D	K	20.3	450.0	27	15:19:51	57.4	597398.1	5227386.1
11010	A	N	8.1	284.8	27	15:12:02	72.7	597495.1	5227469.7
11010	B	N	8.1	284.8	27	15:12:08	65.9	597499.8	5227343.4
11010	C	K	8.1	284.8	27	15:12:16	65.2	597493.4	5227154.7
11030	B	K	22.2	471.5	27	15:04:45	59.0	597708.9	5225043.5
11030	C	K	5.7	238.1	27	15:05:07	66.5	597706.1	5224413.5
20060	A	K	61.3	782.9	39	14:06:34	60.7	594759.8	5229476.3
20070	A	K	37.6	613.1	39	14:03:19	54.2	594865.2	5229397.5
20080	A	K	3.1	176.3	39	13:59:57	65.9	594955.0	5228351.4
20090	A	K	134.7	1160.4	39	13:57:26	45.9	595074.5	5229284.9
20090	B	K	11.8	342.9	39	13:58:16	59.0	595061.0	5228330.6
20110	A	K	61.0	780.9	39	13:51:41	49.8	595267.1	5229262.7
20120	A	K	33.7	580.1	39	13:48:59	52.0	595350.1	5229282.4
20130	A	K	24.7	496.7	39	13:46:04	48.4	595454.7	5229218.7
20130	B	N	24.7	496.7	39	13:46:08	54.0	595461.1	5229145.5
20140	A	K	5.8	241.5	39	13:42:50	44.7	595567.7	5228366.8
19010	A	K	310.6	1762.2	32	18:47:18	62.1	594430.1	5233328.7
19020	A	N	65.1	807.1	32	18:34:30	44.7	595010.8	5232307.5
19030	A	K	8.0	282.3	32	18:29:05	60.4	595749.6	5231325.4
19040	A	K	6.5	254.4	32	18:15:30	61.3	596099.7	5230336.2
19050	A	N	166.5	1290.2	32	19:04:11	57.1	595196.2	5229343.9
19060	A	K	15.1	388.8	32	18:55:18	37.8	596397.2	5228357.0
19060	B	N	13.7	369.5	32	18:55:27	46.3	596221.0	5228346.3

Line	Anom	ID	Cond (S)	Tau (μ S)	Flight #	UTC Time	Bird height (m)	Easting (m)	Northing (m)
19060	C	K	13.7	369.5	32	18:55:29	42.8	596183.6	5228347.4
19060	D	K	3.3	181.8	32	18:55:57	50.7	595554.7	5228350.2
19060	E	K	97.7	988.5	32	18:56:24	56.0	595006.0	5228339.6
19070	A	N	60.9	780.2	32	19:16:21	50.9	596381.0	5227347.4
19070	B	K	60.9	780.2	32	19:16:35	52.1	596701.1	5227368.6
19080	A	N	23.2	481.3	32	19:10:11	51.7	595905.9	5226368.1
19090	A	K	1.7	130.2	33	21:16:18	48.5	595804.5	5225339.2
19090	B	N	1.7	130.2	33	21:16:21	53.1	595872.5	5225327.5
19090	C	N	1.7	130.2	33	21:16:33	57.2	596109.0	5225343.6
19100	A	N	315.1	1775.1	33	21:10:52	54.6	595900.8	5224384.0
19100	B	N	315.1	1775.1	33	21:10:59	58.5	595754.2	5224388.5
19100	C	K	315.1	1775.1	33	21:11:02	56.5	595688.0	5224392.7
19100	D	N	10.6	325.5	33	21:11:05	56.1	595638.4	5224391.7
19100	E	K	10.6	325.5	33	21:11:07	55.5	595589.5	5224389.1
19100	F	N	12.4	351.7	33	21:11:22	57.3	595244.1	5224400.1
19100	G	K	12.4	351.7	33	21:11:26	59.6	595162.3	5224396.1
19110	A	N	85.7	925.7	33	21:03:06	56.1	594987.5	5223400.2
19110	B	N	7.6	275.5	33	21:03:22	50.8	595324.6	5223391.1

APPENDIX 4: DESCRIPTION OF DATABASE FIELDS

The GDB file is a Geosoft binary database. In the database, the Survey lines and Tie Lines are prefixed with an "L" for "Line" and "T" for "Tie".

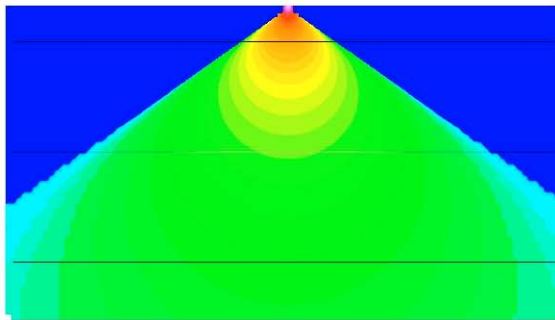
COLUMN	UNITS	DESCRIPTOR
line		Line number
flight		Flight #
emfid		AERODAS Fiducial
utctime	hh:mm:ss.ss	UTC time
X_NAD27	m	UTM Easting (NAD27, Zone 17N)
Y_NAD27	m	UTM Northing (NAD27, Zone 17N)
galt	m	GPS altitude of Mag bird
ralt	m	Radar Altimeter based on helicopter height above terrain
bheight	m	Terrain clearance of EM bird
dtm	m	Digital Terrain Model
basemag	nT	Base station total magnetic intensity
magU	nT	Final levelled total magnetic intensity
Zon	nT/s	Processed Streaming On-Time Z component Channels 1-16
Zoff	nT/s	Processed Streaming Off-Time Z component Channels 0-16
Xon	nT/s	Processed Streaming On-Time X component Channels 1-16
Xoff	nT/s	Processed Streaming Off-Time X component Channels 0-16
pwline		powerline monitor data channel
Grade		Classification from 1-7 based on conductance of conductor pick
Anom_Labels		Alphanumeric label of conductor pick
Off_Con	S	Off-time conductance at conductor pick
Off_Tau	µs	Off-time decay constant at conductor pick
Anom_ID		Anomaly Character (K= thick, N = thin)
Off_AllCon	S	Off-time conductance
Off_AllTau	µs	Off-time decay constant
TranOff	ms	Transmitter Off
TranOn	ms	Transmitter On
TranPeak	ms	Transmitter Peak
TranSwitch	ms	Transmitter Switch
Off_Pick		EM Off time anomaly pick
lat_wgs84		WGS84 Latitude
long_wgs84		WGS84 Longitude

APPENDIX 5: AEROTEM DESIGN CONSIDERATIONS

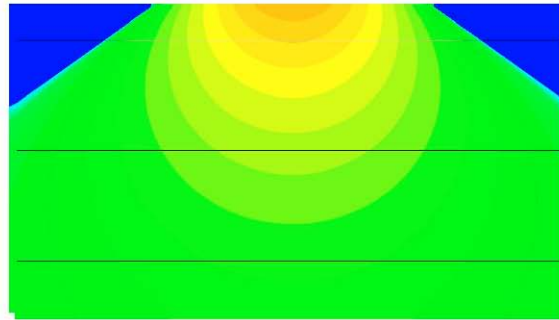
Helicopter-borne EM systems offer an advantage that cannot be matched from a fixed-wing platform. The ability to fly at slower speed and collect data with high spatial resolution, and with great accuracy, means the helicopter EM systems provide more detail than any other EM configuration, airborne or ground-based. Spatial resolution is especially important in areas of complex geology and in the search for discrete conductors. With the advent of helicopter-borne high-moment time domain EM systems the fixed wing platforms are losing their *only* advantage – depth penetration.

Advantage 1 – Spatial Resolution

The AeroTEM system is specifically designed to have a small footprint. This is accomplished through the use of concentric transmitter-receiver coils and a relatively small diameter transmitter coil (5 m). The result is a highly focused exploration footprint, which allows for more accurate “mapping” of discrete conductors. Consider the transmitter primary field images shown in Figure 1, for AeroTEM versus a fixed-wing transmitter.



The footprint of AeroTEM at the earth's surface is roughly 50m on either side of transmitter



The footprint of a fixed-wing system is roughly 150 m on either side of the transmitter

Figure 1. A comparison of the footprint between AeroTEM and a fixed-wing system, highlights the greater resolution that is achievable with a transmitter located closer to the earth's surface. The AeroTEM footprint is one third that of a fixed-wing system and is symmetric, while the fixed-wing system has even lower spatial resolution along the flight line because of the separated transmitter and receiver configuration.

At first glance one may want to believe that a transmitter footprint that is distributed more evenly over a larger area is of benefit in mineral exploration. In fact, the opposite is true; by energizing a larger surface area, the ability to energize and detect discrete conductors is reduced. Consider, for example, a comparison between AeroTEM and a fixed-wing system over the Mesamax Deposit (1,450,000 tonnes of 2.1% Ni, 2.7% Cu, 5.2 g/t Pt/Pd). In a test survey over three flight lines spaced 100 m apart, AeroTEM detected the Deposit on all three flight lines. The fixed-wing system detected the Deposit only on two flight lines. In exploration programs that seek to expand the flight line spacing in an effort to reduce the cost of the airborne survey, discrete conductors such as the Mesamax Deposit can go undetected. The argument often put forward in favour of using fixed-wing systems is that because of their larger footprint, the flight line spacing can indeed be widened. Many fixed-wing surveys are flown at 200 m or 400 m. Much of the survey work performed by Aeroquest has been to survey in areas that were previously flown at these wider line spacings. One of the reasons for AeroTEM's impressive discovery record has been the strategy of flying closely spaced lines and finding all the discrete near-surface conductors. These higher resolution surveys are being flown within existing mining camps, areas that improve the chances of discovery.

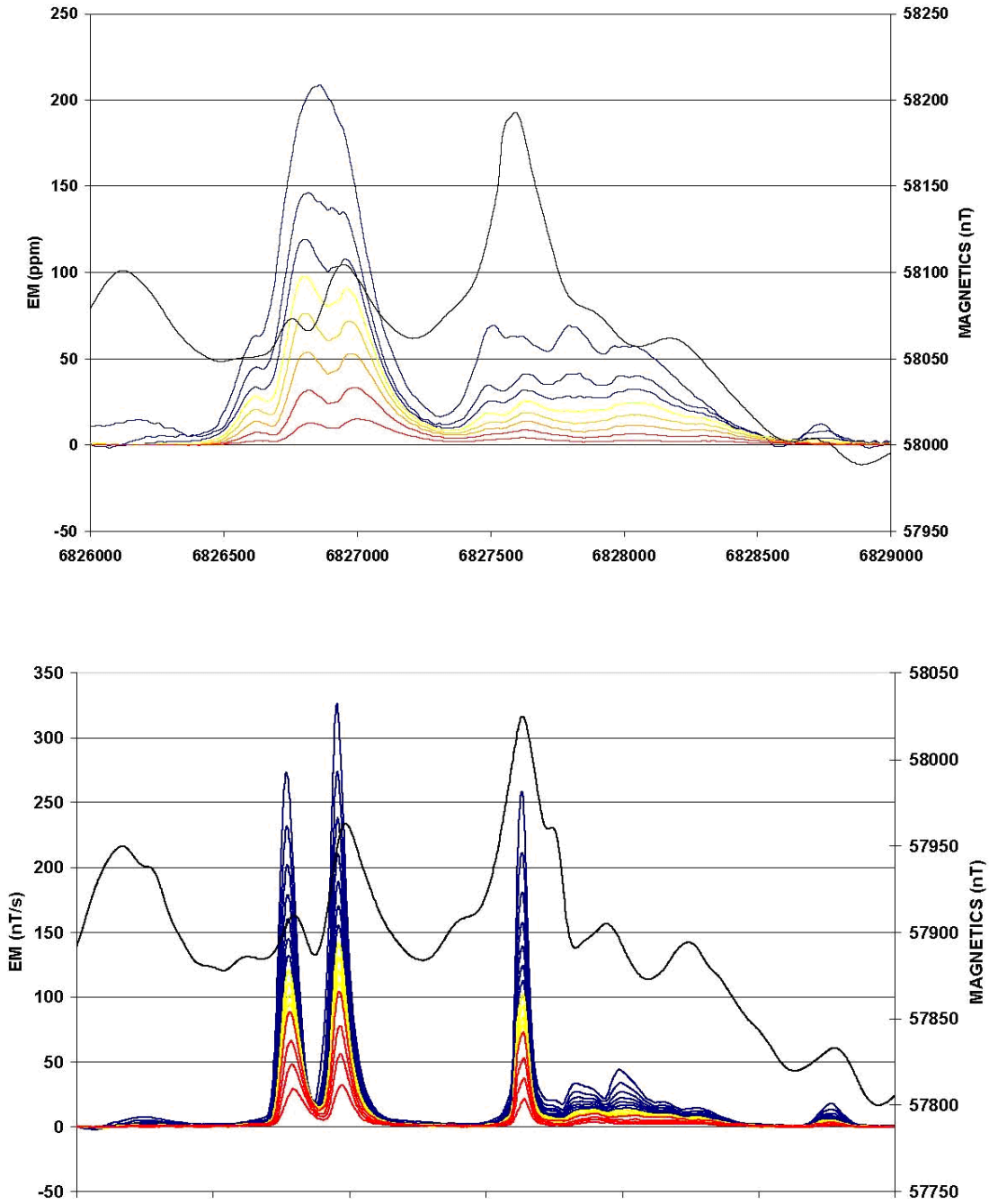


Figure 2. Fixed-wing (upper) and AeroTEM (lower) comparison over the eastern limit of the Mesamax Deposit, a Ni-Cu-PGE zone located in the Raglan nickel belt and owned by Canadian Royalties. Both systems detected the Deposit further to the west where it is closer to surface.

The small footprint of AeroTEM combined with the high signal to noise ratio (S/N) makes the system more

suitable to surveying in areas where local infrastructure produces electromagnetic noise, such as power lines and railways. In 2002 Aeroquest flew four exploration properties in the Sudbury Basin that were under option by FNX Mining Company Inc. from Inco Limited. One such property, the Victoria Property, contained three major power line corridors.

The resulting AeroTEM survey identified all the known zones of Ni-Cu-PGE mineralization, and detected a response between two of the major power line corridors but in an area of favorable geology. Three boreholes were drilled to test the anomaly, and all three intersected sulphide. The third borehole encountered 1.3% Ni, 6.7% Cu, and 13.3 g/t TPMs over 42.3 ft. The mineralization was subsequently named the Powerline Deposit.

The success of AeroTEM in Sudbury highlights the advantage of having a system with a small footprint, but also one with a high S/N. This latter advantage is achieved through a combination of a high-moment (high signal) transmitter and a rigid geometry (low noise). Figure 3 shows the Powerline Deposit response and the response from the power line corridor at full scale. The width of power line response is less than 75 m.

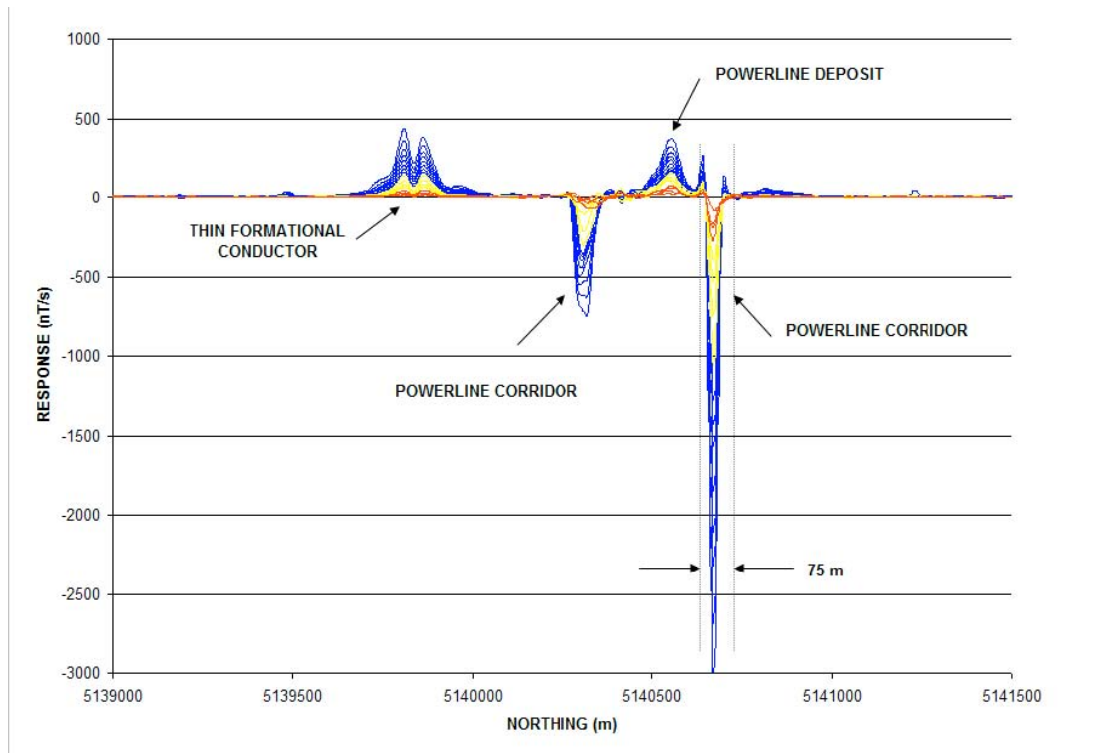


Figure 3. The Powerline Deposit is located between two major power line corridors, which make EM surveying problematic. Despite the strong response from the power line, the anomaly from the Deposit is clearly detected. Note the thin formational conductor located to the south. The only way to distinguish this response from that of two closely spaced conductors is by interpreting the X-axis coil response.

Advantage 2 – Conductance Discrimination

The AeroTEM system features full waveform recording and as such is able to measure the on-time response due to high conductance targets. Due to the processing method (primary field removal), there is attenuation of the response with increasing conductance, but the AeroTEM on-time measurement is still superior to systems that rely on lower base frequencies to detect high conductance targets, but do not measure in the on-time.

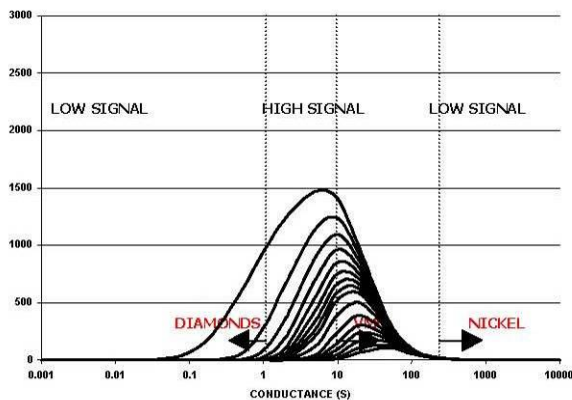
The peak response of a conductive target to an EM system is a function of the target conductance and the EM system base frequency. For time domain EM systems that measure only in the off-time, there is a drop in the peak response of a target as the base frequency is lowered for all conductance values below the peak system

response. For example, the AeroTEM peak response occurs for a 10 S conductor in the early off-time and 100 S in the late off-time for a 150 Hz base frequency. Because base frequency and conductance form a linear relationship when considering the peak response of any EM system, a drop in base frequency of 50% will double the conductance at which an EM system shows its peak response. If the base frequency were lowered from 150 Hz to 30 Hz there would be a fivefold increase in conductance at which the peak response of an EM occurred.

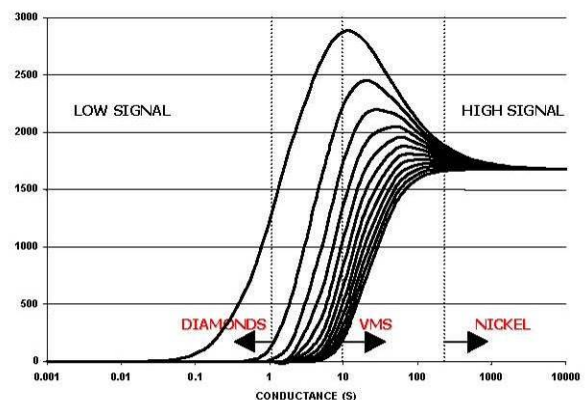
However, in the search for highly conductive targets, such as pyrrhotite-related Ni-Cu-PGM deposits, a fivefold increase in conductance range is a high price to pay because the signal level to lower conductance targets is reduced by the same factor of five. For this reason, EM systems that operate with low base frequencies are not suitable for general exploration unless the target conductance is more than 100 S, or the target is covered by conductive overburden.

Despite the excellent progress that has been made in modeling software over the past two decades, there has been little work done on determining the optimum form of an EM system for mineral exploration. For example, the optimum configuration in terms of geometry, base frequency and so remain unknown. Many geophysicists would argue that there is no single ideal configuration, and that each system has its advantages and disadvantages. We disagree.

When it comes to detecting and discriminating high-conductance targets, it is necessary to measure the pure in phase response of the target conductor. This measurement requires that the measured primary field from the transmitter be subtracted from the total measured response such that the secondary field from the target conductor can be determined. Because this secondary field is in-phase with the transmitter primary field, it must be made while the transmitter is turned on and the transmitter current is changing. The transmitted primary field is several orders of magnitude larger than the secondary field. AeroTEM uses a bucking coil to reduce the primary field at the receiver coils. The only practical way of removing the primary field is to maintain a rigid geometry between the transmitter, bucking and receiver coils. This is the main design consideration of the AeroTEM airframe and it is the only time domain airborne system to have this configuration.



The off-time AeroTEM response for the 16 channel configuration.



The on-time response assuming 100% removal of the measured primary field.

Figure 4. The off-time and on-time response nomogram of AeroTEM for a base frequency of 150 Hz. The on-time response is much stronger for higher conductance targets and this is why on-time measurements are more important than lower frequencies when considering high conductance targets in a resistive environment.

Advantage 3 – Multiple Receiver Coils

AeroTEM employs two receiver coil orientations. The Z-axis coil is oriented parallel to the transmitter coil and both are horizontal to the ground. This is known as a maximum coupled configuration and is optimal for detection. The X-axis coil is oriented at right angles to the transmitter coil and is oriented along the line-of-flight.

This is known as a minimum coupled configuration, and provides information on conductor orientation and thickness. These two coil configurations combined provide important information on the position, orientation, depth, and thickness of a conductor that cannot be matched by the traditional geometries of the HEM or fixed-wing systems. The responses are free from a system geometric effect and can be easily compared to model type curves in most cases. In other words, AeroTEM data is very easy to interpret. Consider, for example, the following modeled profile:

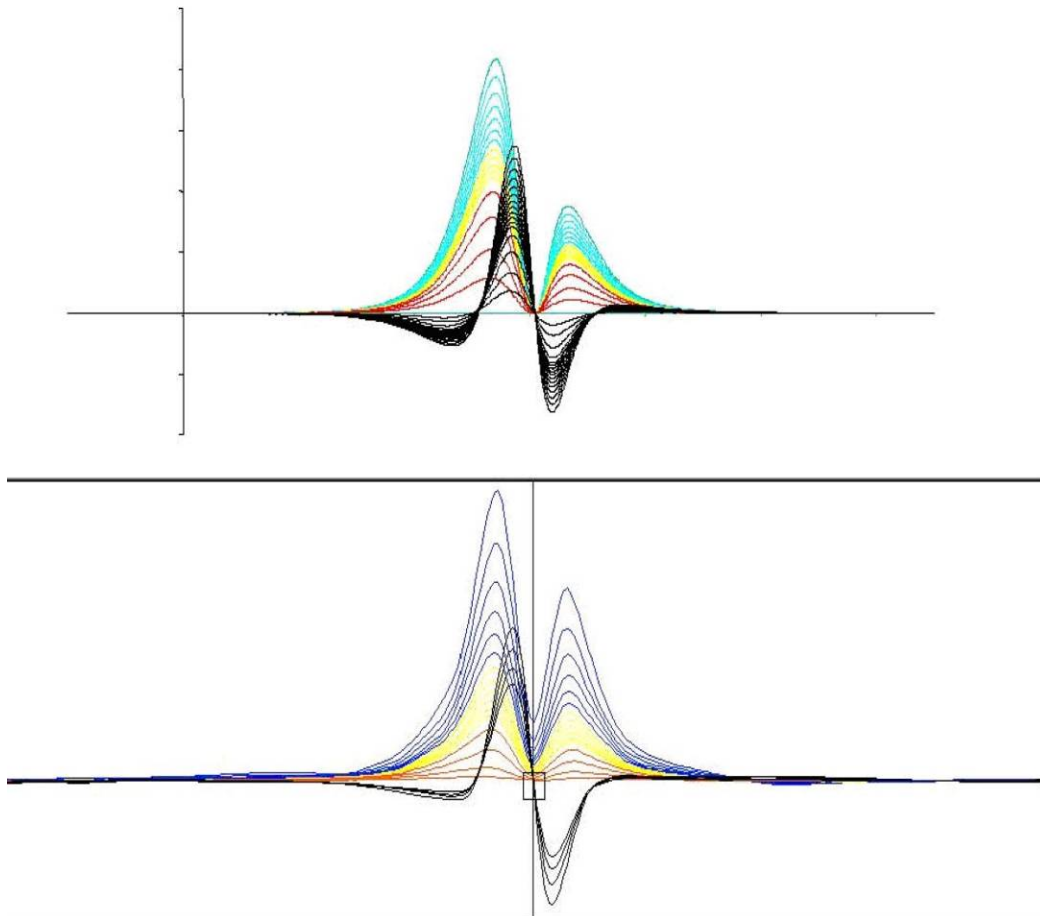


Figure 5. Measured (lower) and modeled (upper) AeroTEM responses are compared for a thin steeply dipping conductor. The response is characterized by two peaks in the Z-axis coil, and a cross-over in the X-axis coil that is centered between the two Z-axis peaks. The conductor dips toward the higher amplitude Z-axis peak. Using the X-axis cross-over is the only way of differentiating the Z-axis response from being two closely spaced conductors.

HEM versus AeroTEM

Traditional helicopter EM systems operate in the frequency domain and benefit from the fact that they use narrowband as opposed to wide-band transmitters. Thus all of the energy from the transmitter is concentrated in

a few discrete frequencies. This allows the systems to achieve excellent depth penetration (up to 100 m) from a transmitter of modest power. The Aeroquest Impulse system is one implementation of this technology.

The AeroTEM system uses a wide-band transmitter and delivers more power over a wide frequency range. This frequency range is then captured into 16 time channels, the early channels containing the high frequency information and the late time channels containing the low frequency information down to the system base frequency. Because frequency domain HEM systems employ two coil configurations (coplanar and coaxial) there are only a maximum of three comparable frequencies per configuration, compared to 16 AeroTEM off-time and 12 AeroTEM on-time channels.

Figure 6 shows a comparison between the Dighem HEM system (900 Hz and 7200 Hz coplanar) and AeroTEM (Z-axis) from surveys flown in Raglan, in search of highly conductive Ni-Cu-PGM sulphide. In general, the AeroTEM peaks are sharper and better defined, in part due to the greater S/N ratio of the AeroTEM system over HEM, and also due to the modestly filtered AeroTEM data compared to HEM. The base levels are also better defined in the AeroTEM data. AeroTEM filtering is limited to spike removal and a 5-point smoothing filter. Clients are also given copies of the raw, unfiltered data.

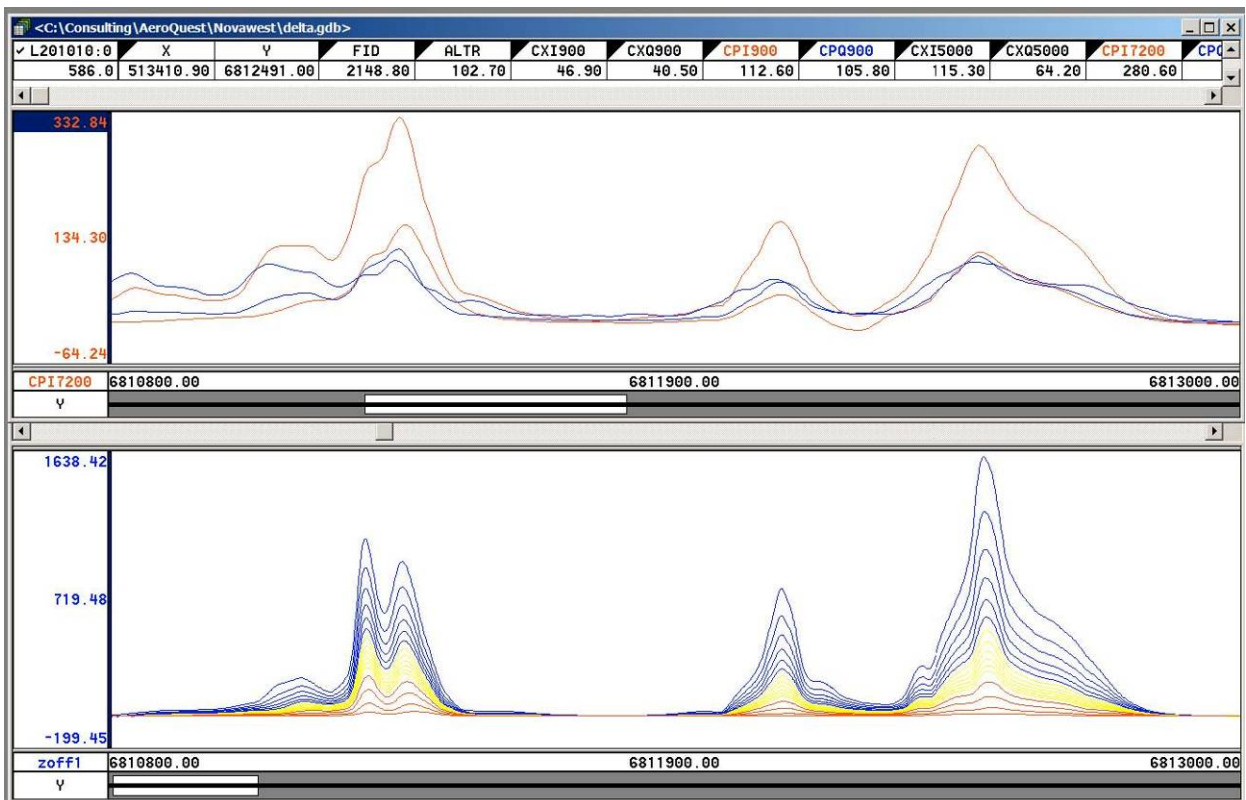


Figure 6. Comparison between Dighem HEM (upper) and AeroTEM (lower) surveys flown in the Raglan area. The AeroTEM responses appear to be more discrete, suggesting that the data is not as heavily filtered as the HEM data. The S/N advantage of AeroTEM over HEM is about 5:1.

Aeroquest Limited is grateful to the following companies for permission to publish some of the data from their respective surveys: Wolfden Resources, FNX Mining Company Inc, Canadian Royalties, Nova West Resources, Aurogin Resources, Spectrem Air. Permission does not imply an endorsement of the AeroTEM system by these companies.

APPENDIX 6: AEROTEM INSTRUMENTATION SPECIFICATION SHEET

AEROTEM Helicopter Electromagnetic System

System Characteristics

- Transmitter: Triangular Pulse Shape Base Frequency 90 Hz
- Tx On Time – 1,900 (90 Hz) μ s
- Tx Off Time – 3,600 (90 Hz) μ s
- Loop Diameter - 12 m
- Peak Current - 410 A
- Peak Moment – 230,000 NIA
- Typical Z Axis Noise at Survey Speed = 10 nT/s peak to peak
- Sling Weight: 1200 lb
- Length of Tow Cable: 52 m
- Bird Survey Height: 30 m nominal

Receiver

- Two Axis Receiver Coils (x, z) positioned at centre of transmitter loop
- Selectable Time Delay to start of first channel 28 , 55, or 83 ms

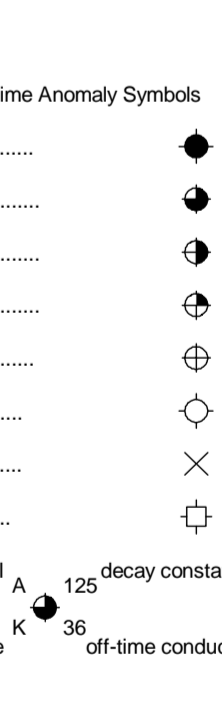
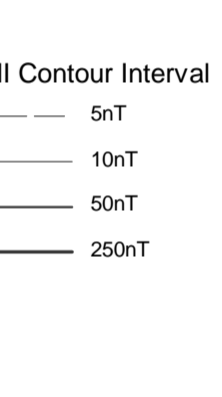
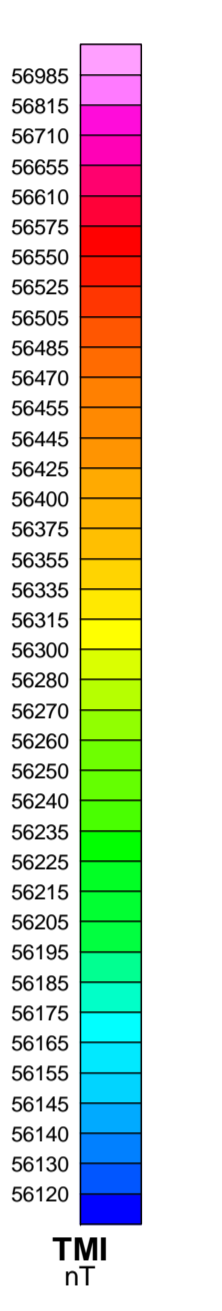
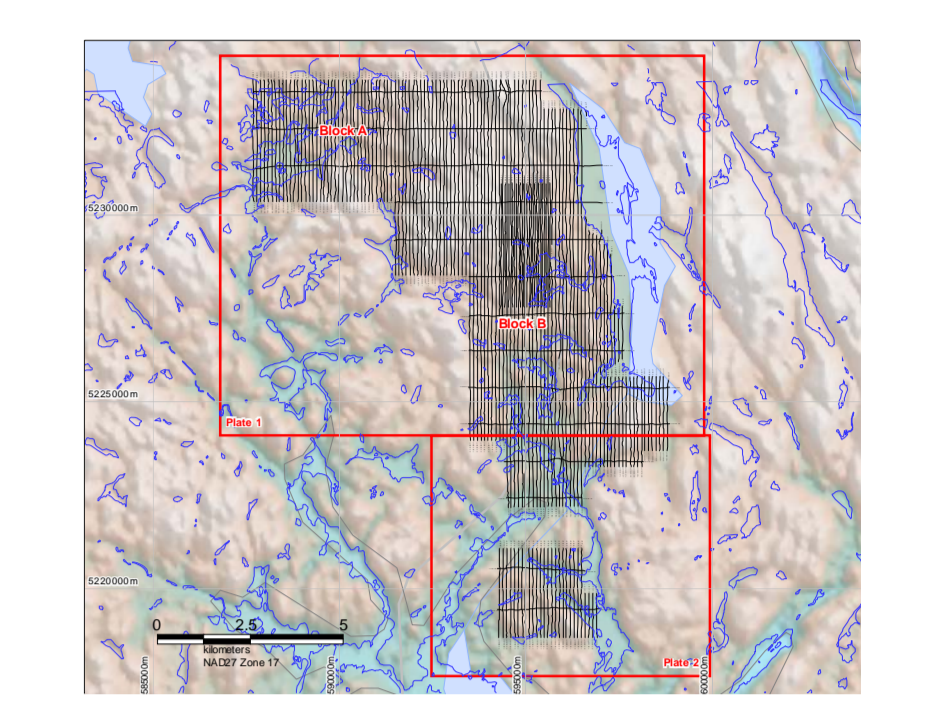
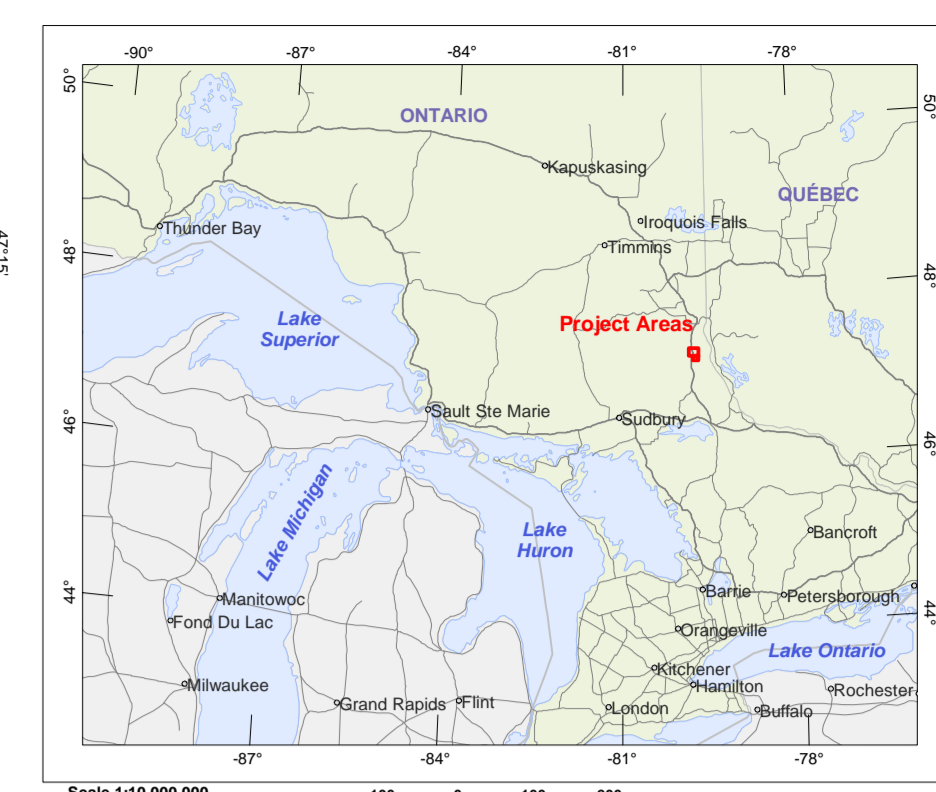
Display & Acquisition

- AERODAS Digital recording at 36000 samples per second (27.778 μ s channel width)
- Recording & Display Rate = 10 readings per second.
- On-board display - six channels Z-component and 1 X-component

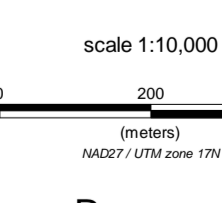
System Considerations

Comparing a fixed-wing time domain transmitter with a typical moment of 500,000 NIA flying at an altitude of 120 m with a Helicopter TDEM at 30 m, notwithstanding the substantial moment loss in the airframe of the fixed wing, the same penetration by the lower flying helicopter system would only require a sixty-fourth of the moment. Clearly the AeroTEM system with 230,000 NIA has more than sufficient moment. The airframe of the fixed wing presents a response to the towed bird, which requires dynamic compensation. This problem is non-existent for AeroTEM since transmitter and receiver positions are fixed. The AeroTEM system is completely portable, and can be assembled at the survey site within half a day.

The geographic data has been derived from a 1:50,000 MRC Natural Resources Canada map. This contour interval has been derived from the 1:50,000 MRC Natural Resources Canada map. This map is a derivative of the 1:50,000 MRC Natural Resources Canada map. This map is a derivative of the 1:50,000 MRC Natural Resources Canada map. This map is a derivative of the 1:50,000 MRC Natural Resources Canada map.



SURVEY SPECIFICATIONS
 Survey from: April 29-May 28, 2008
 Traverse file spacing: 100 metres
 Traverse file direction: 07187
 Nominal EM lead height: 20 metres
 Aircraft: Aeromaster A-500 (CFRIVEN)
INSTRUMENTATION
 Data acquisition: ADAS 4 RNS (GPS-3)
 Magnetometer: Geometrics G-85A (vector, vpp)
 Installation: Toward and 33 m above EM lead
 Sensitivity: 0.01 nT/mT
 Electromagnetics: AeroTEM IV System (PAPA)
 Configuration: Towered
NAVIGATION
 Navigation: Chironex Global Positioning System (GPS)
 Navigation equipment: ACNAV with HD-TECH R1000P receiver
 Radio altimeter: Trimble R10000-700-50
DATA PROCESSING
 Magnetometry: Manual, 5-min and micro-logging corrections
POSITIONING
 Datum: NAD83
 Major Axis: 6378206.400
 Eccentricity: 0.00671866
MAP PROJECTION
 Projection: Universal Transverse Mercator
 Central Meridian: 071°W (Zone 17)
 Central Scale Factor: 0.9998
 False Easting/Heighting: 500,000m/0m



Temex Resources Corp.
 New Liskeard Area, Ontario

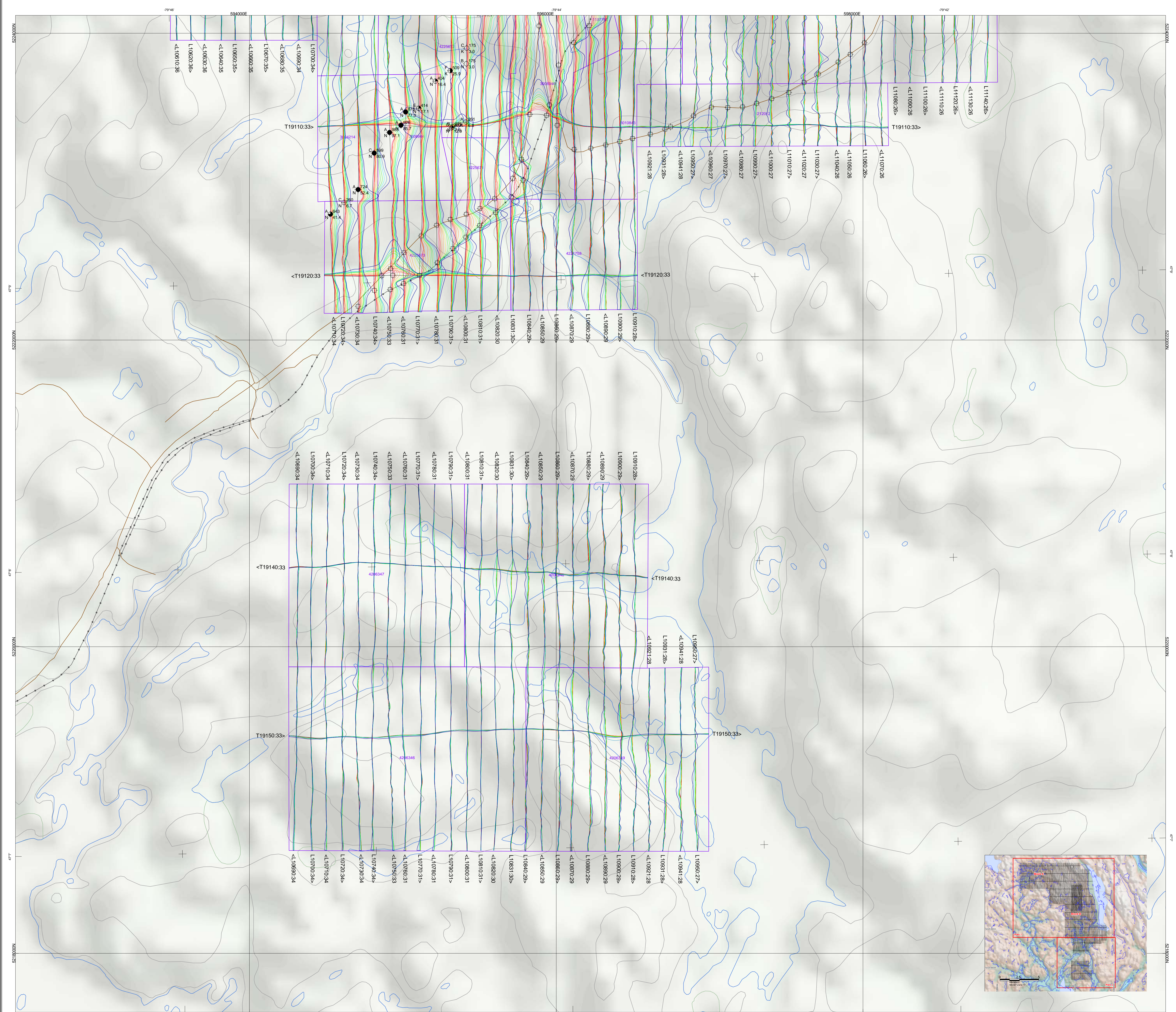
TOTAL MAGNETIC INTENSITY
 Block A & Block B

NIS 031846_05



September 2008

The topographic data base was derived from 1:50,000 NRC (Natural Resources Canada) NTDB data
 Topo contours derived from NASA SRTM (Shuttle Radar Topography Mission) data
 Inset data derived from Natural Resources Canada Atlas of Canada Base Map
 This map accompanies the technical report entitled "Report on a Helicopter-Borne Magnetic and Electromagnetic Survey, Athabasca Basin, SK, by Aeroquest Limited, September 2008"



- AeroTEM Profiles**
 positive excursion to top and right, 1mm=20nT/s
- Z1 Off-Time Channel
 - Z2 Off-Time Channel
 - Z3 Off-Time Channel
 - Z4 Off-Time Channel
 - Z5 Off-Time Channel
 - Z6 Off-Time Channel
 - Z7 Off-Time Channel
 - Z8 Off-Time Channel
 - Z9 Off-Time Channel
 - Z10 Off-Time Channel
 - Z11 Off-Time Channel

- Rail
- Roads
- Mining Claims
- Wetland
- Lake

- Off-Time Anomaly Symbols**
- >50S
 - 35-50S
 - 20-35S
 - 10-20S
 - 5-10S
 - 1-5S
 - <1S
 - Cultural Sources
- anomaly label A 125 decay constant (µs)
 thickN source 35 off-time conductance (S)

SURVEY SPECIFICATIONS:
 Survey from: April 28-May 28, 2008
 Traverse line spacing: 100 metres
 Traverse line direction: 0°/180°
 Nominal EM bird height: 30 metres
 Aircraft: Aerospaciale A-Star 350BA (C-FWEN)

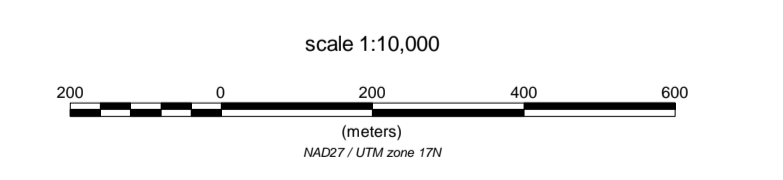
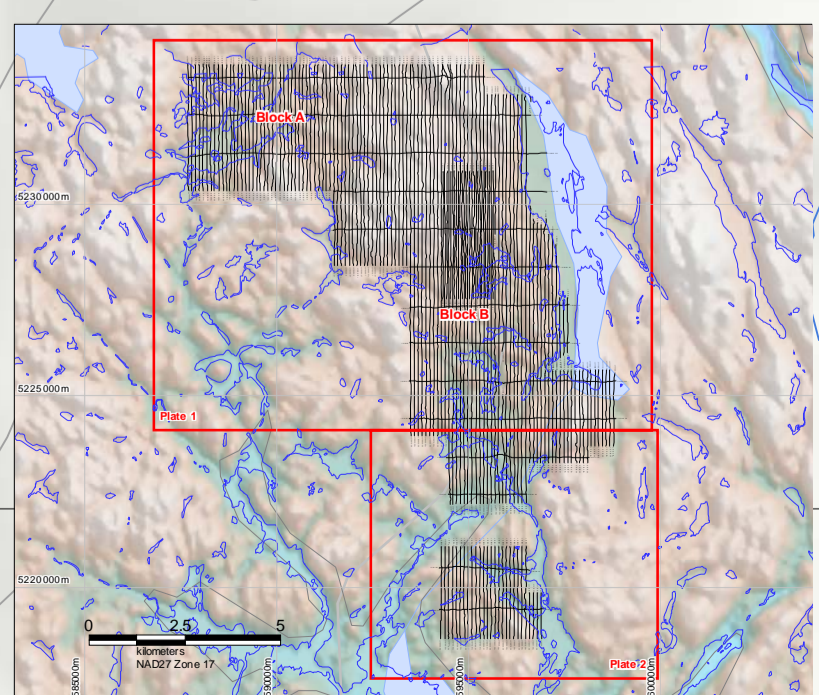
INSTRUMENTATION:
 Data acquisition: ADAS & RMS DGR-33
 Magnetometer: Geometrics G-823A cesium vapour
 Installation: Towed bird 33 m above EM bird
 Sensitivity: 501 nanoTesla
 Electromagnetics: AeroTEM IV System (PAPA)
 Configuration: Towed bird

NAVIGATION:
 Navigation: Differential Global Positioning System (DGPS)
 Navigation equipment: AGNAV with MID-TECH RX400p receiver
 Radar Altimeter: Terra TRA3000/TRI-30

DATA PROCESSING
 Magnetics: diurnal, baseline and micro-leveling corrections

POSITIONING
 Datum: NAD27
 Major Axis: 6378206.400
 Eccentricity: 0.082271854

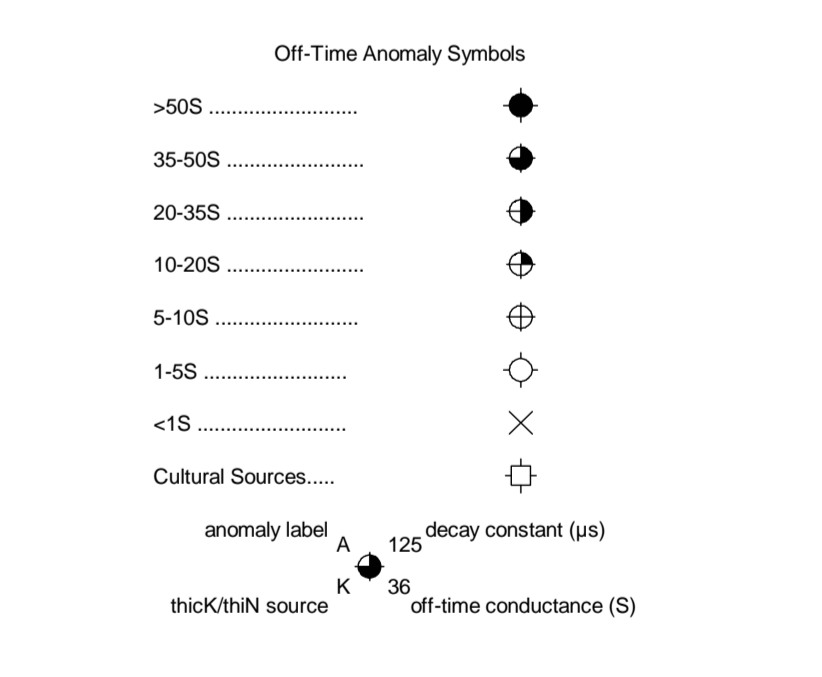
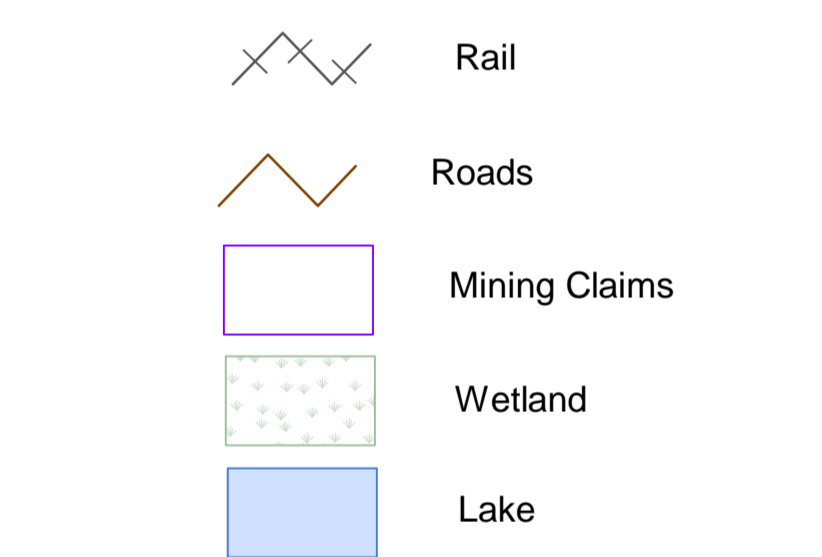
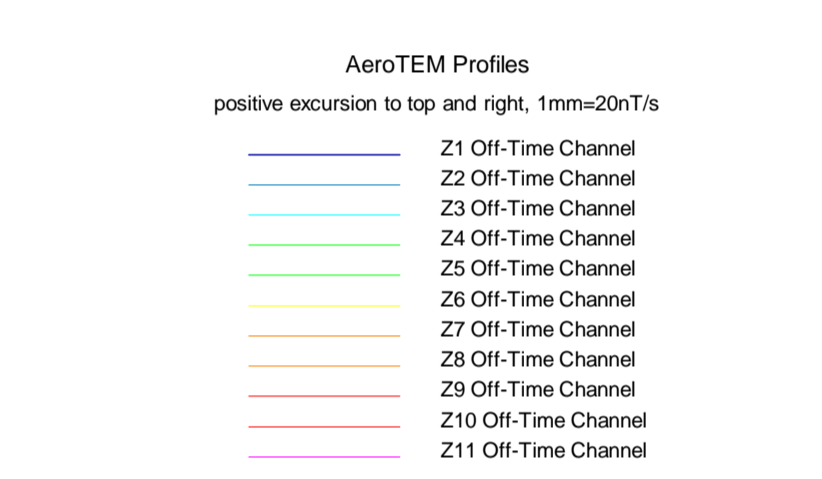
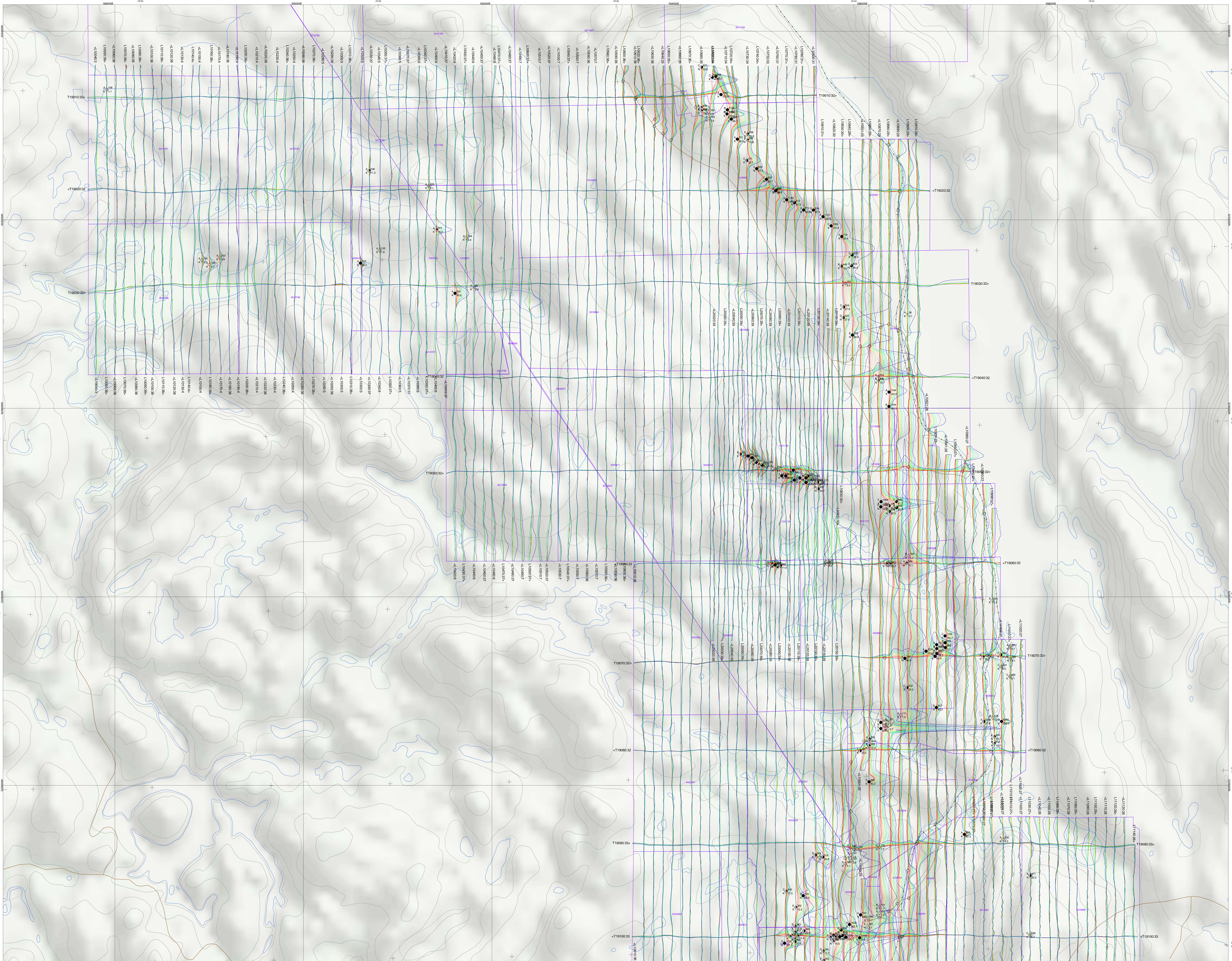
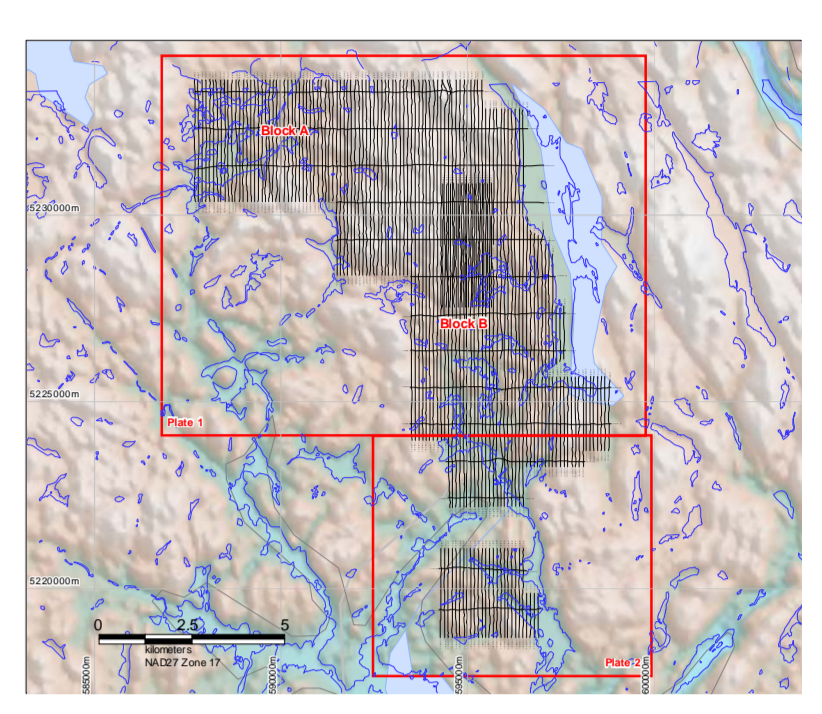
MAP PROJECTION
 Projection: Universal Transverse Mercator
 Central Meridian: 87°W (Zone 17)
 Central Scale Factor: 0.9996
 False Easting/Northing: 500,000m/0m



Temex Resources Corp.
 New Liskeard Area, Ontario

AEROTE M
OFF-TIME PROFILES
 Block A
 NTS 031M04

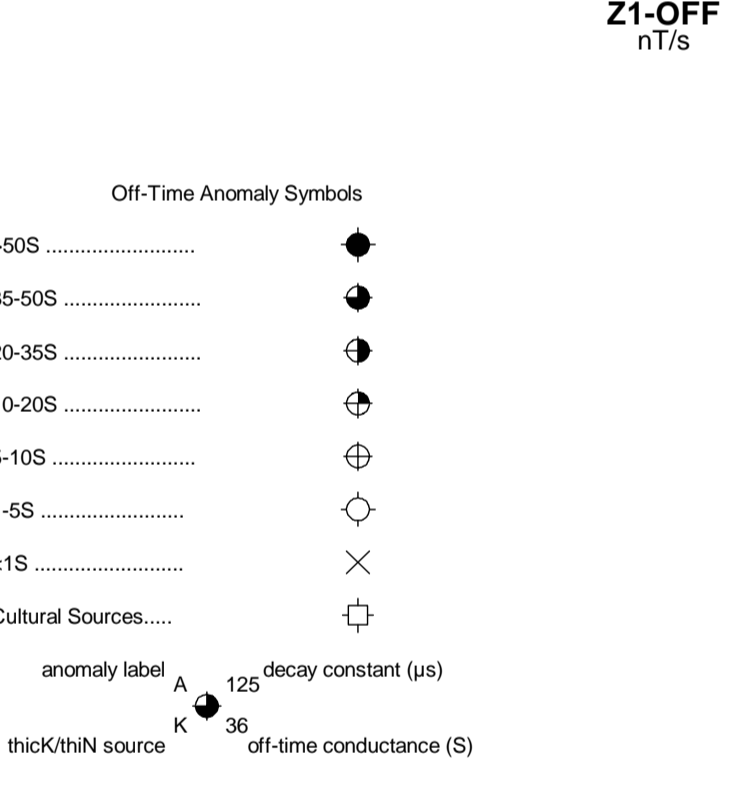
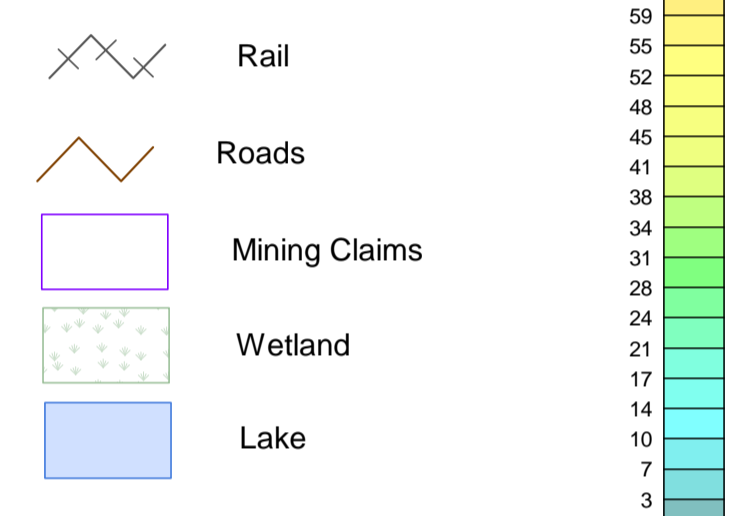
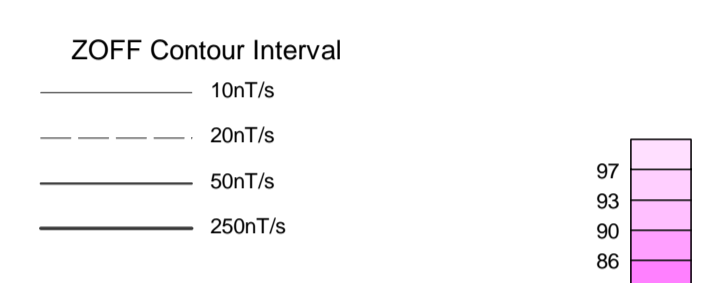
AEROQUEST
 7687 Bath Road, Mississauga, ON, CANADA L4T 3T1
 Tel: (905) 672-8129 Fax: (905) 672-7083
 www.aeroquest.ca
 September 2008



SURVEY SPECIFICATIONS:
 Survey from April 29 May 26, 2008
 Traverse line spacing: 100 metres
 Traverse line direction: 0°/180°
 Nominal EM field height: 30 metres
 Aircraft: Aerotem A-Star 3000A (GP/WEM)
SYSTEMS:
 Data acquisition: ADAS & RMS (GP/2)
 Magnetometer: Geometrics G-824 (aircraft mount)
 Isolation Towers: 30 m above EM field
 Sensitivity: 100 nV/mT
NAVIGATION:
 Navigation: Trimble Global Positioning System (GPS)
 Navigation equipment: ADAS with 100-TECH PPK/PPK receiver
DATA PROCESSING:
 Magnetometry: Geometrics G824 (aircraft mount)
POST-PROCESSING:
 Software: RES2DINV
 Map: MapInfo
 Map Area: 0°12'00" N 80°00'00" W
 Accuracy: ±0.002/100m
MAP PROJECTION:
 Projection: Universal Transverse Mercator
 Central Meridian: 87°W (Zone 17)
 Central Scale Factor: 0.9996
 False Easting/Northing: 500,000/0m

Temex Resources Corp.
 New Liskard Area, Ontario
AEROTEM
OFF-TIME PROFILES
 Block A & Block B
 NTS 031M06.05

The topographic data base was derived from 1:50,000 NRC (Natural Resources Canada) NTDB data
 Topo contours derived from NASA SRTM (Shuttle Radar Topography Mission) data
 Inset data derived from Natural Resources Canada Atlas of Canada Base Map
 This map accompanies the technical report entitled Report on a Helicopter-Borne Magnetic and Electromagnetic Survey, Athabasca Basin, SK, by Aeroquest Limited, September 2008
 Grid North
 NAD27-Zone17



SURVEY SPECIFICATIONS:
 Survey from: April 28-May 28, 2008
 Traverse line spacing: 100 metres
 Traverse line direction: 0°/180°
 Nominal EM bird height: 30 metres
 Aircraft: Aerospaciale A-Star 350BA (C-FWEN)

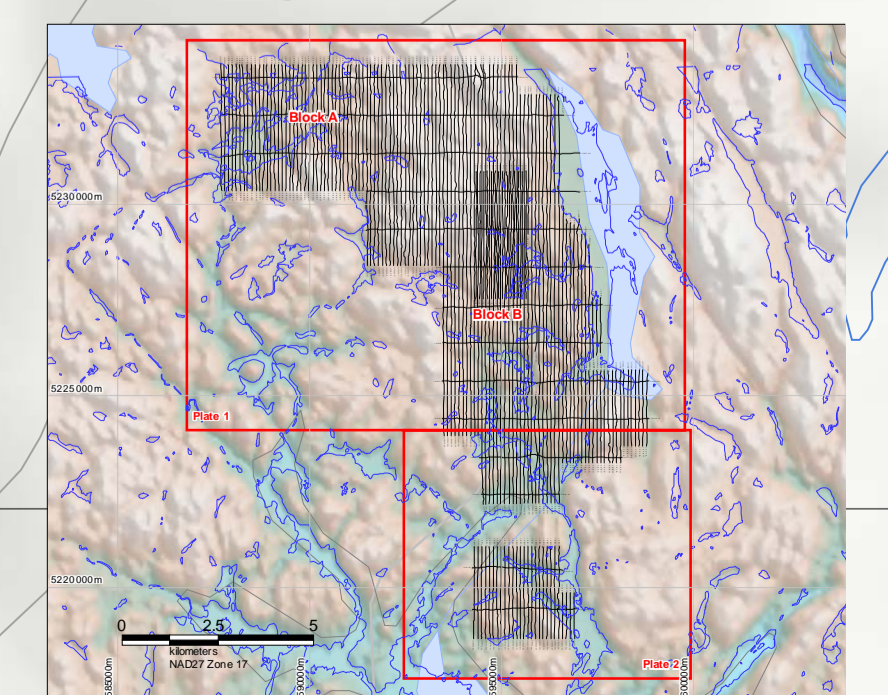
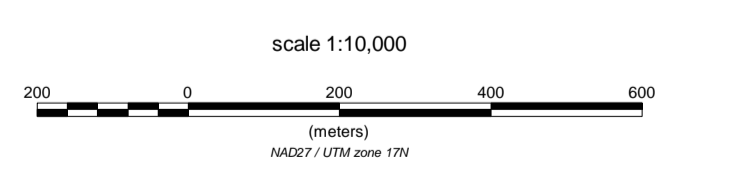
INSTRUMENTATION:
 Data acquisition: ADAS & RMS DGR-33
 Magnetometer: Geometrics G-823A cesium vapour
 Installation: Towed bird 33 m above EM bird
 Sensitivity: 501 nanoTesla
 Electromagnetics: AeroTEM IV System (PAPA)
 Configuration: Towed bird

NAVIGATION:
 Navigation: Differential Global Positioning System (DGPS)
 Navigation equipment: AGNAV with MID-TECH RX400p receiver
 Radar Altimeter: Terra TRA3000/TRI-30

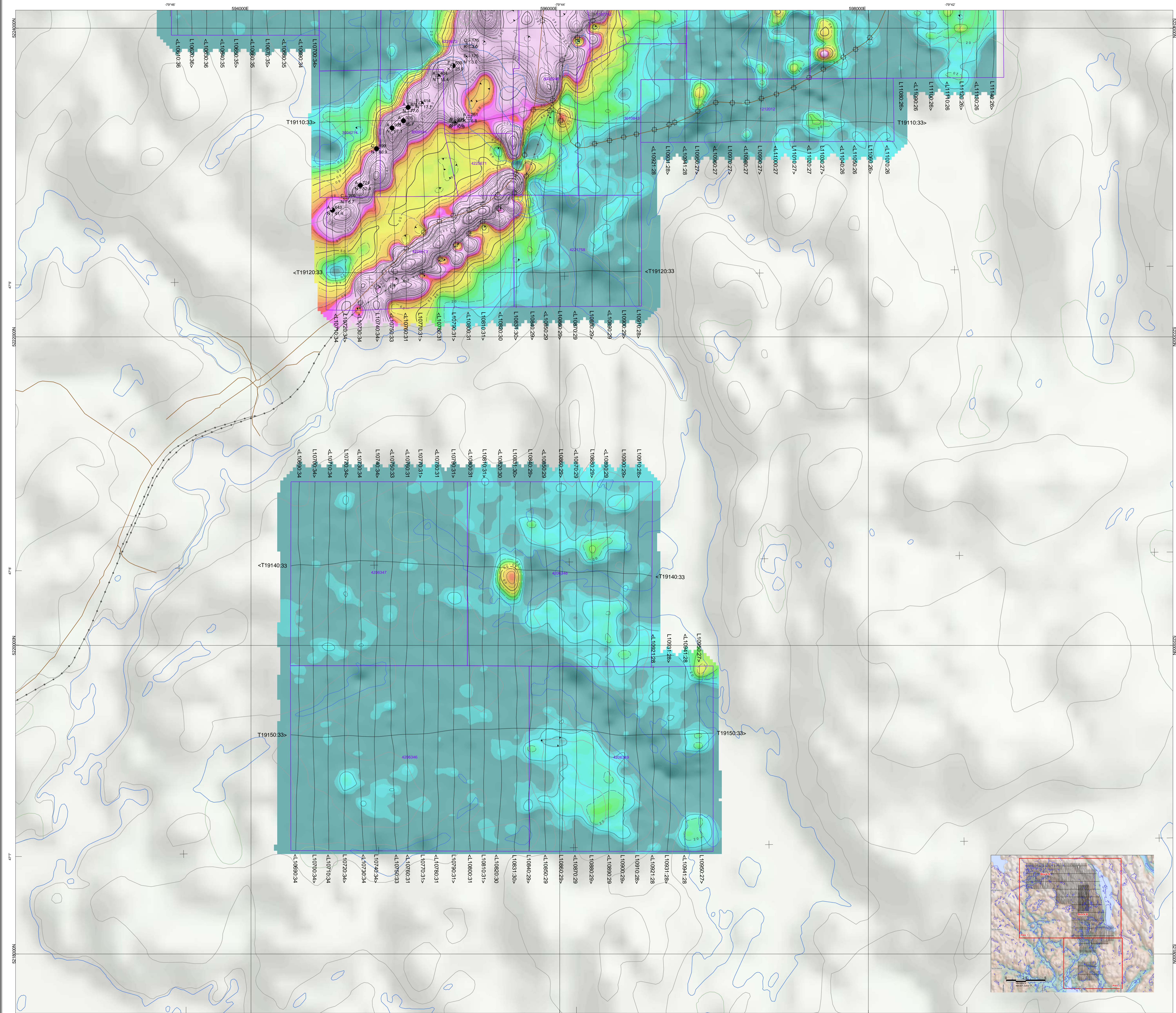
DATA PROCESSING
 Magnetics: diurnal, baseline and micro-leveling corrections

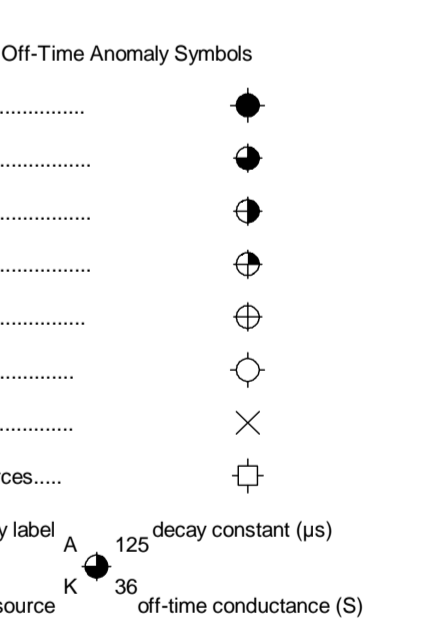
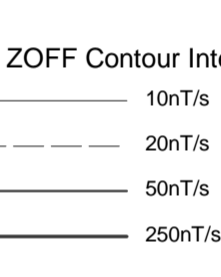
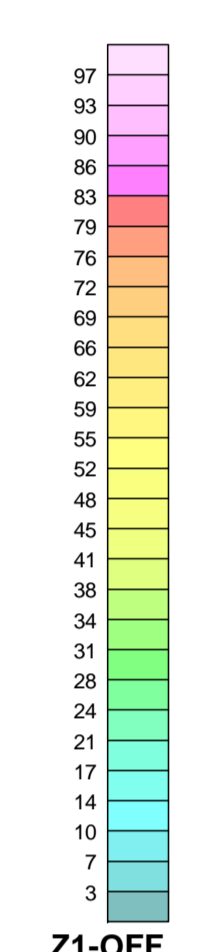
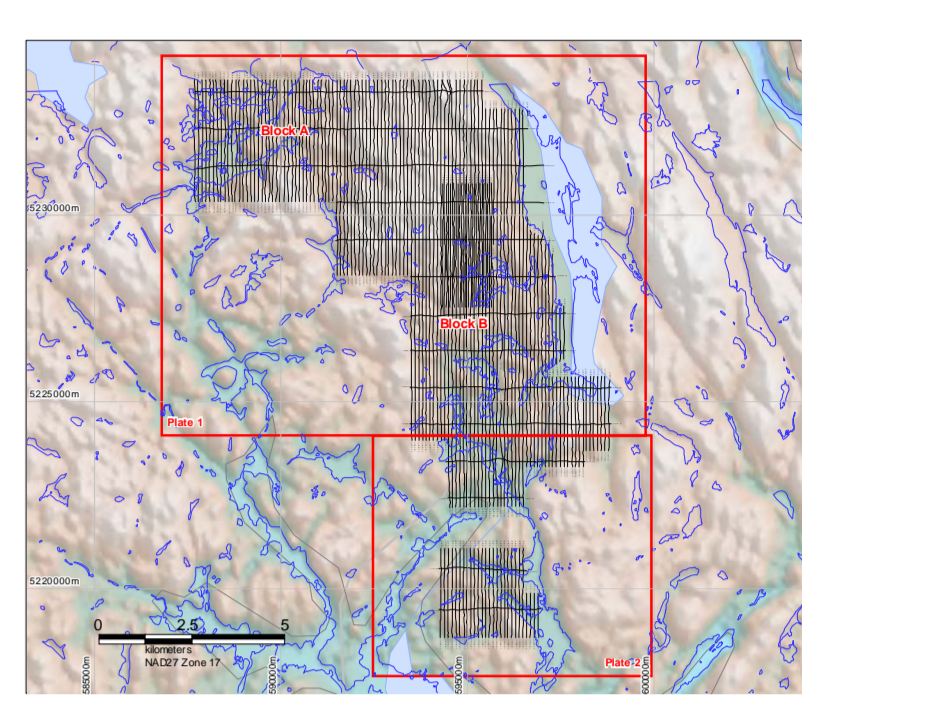
POSITIONING
 Datum: NAD27
 Major Axis: 6378206.400
 Eccentricity: 0.082271854

MAP PROJECTION
 Projection: Universal Transverse Mercator
 Central Meridian: 87°W (Zone 17)
 Central Scale Factor: 0.9996
 False Easting/Northing: 500,000m/0m

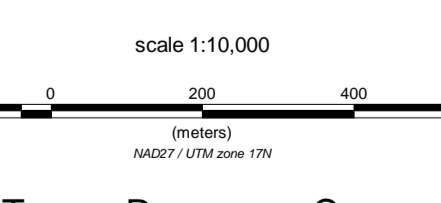


Temex Resources Corp.
 New Liskard Area, Ontario
AEROTEM
Z1-OFF TIME
Block A
 NTS 031M04

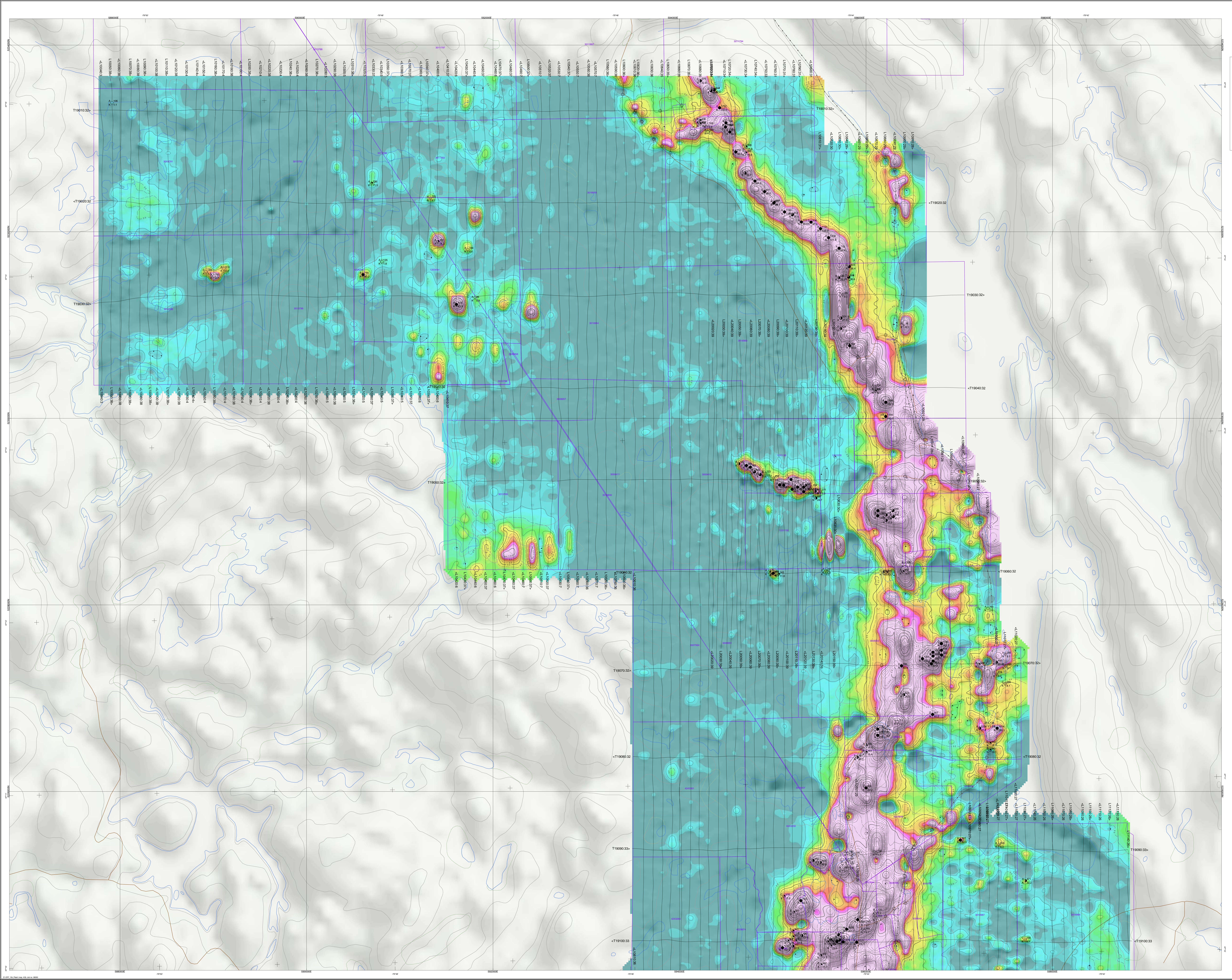


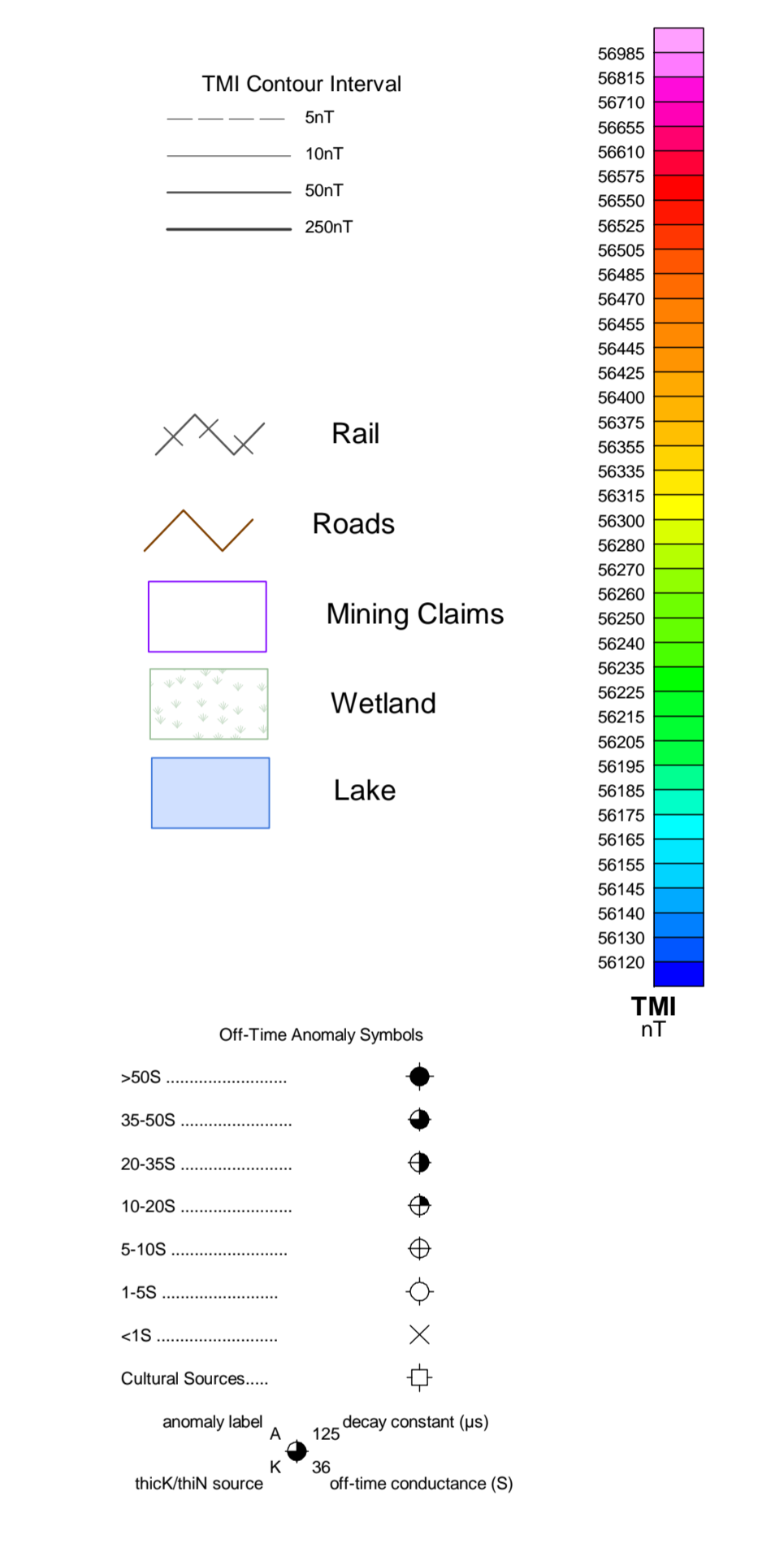
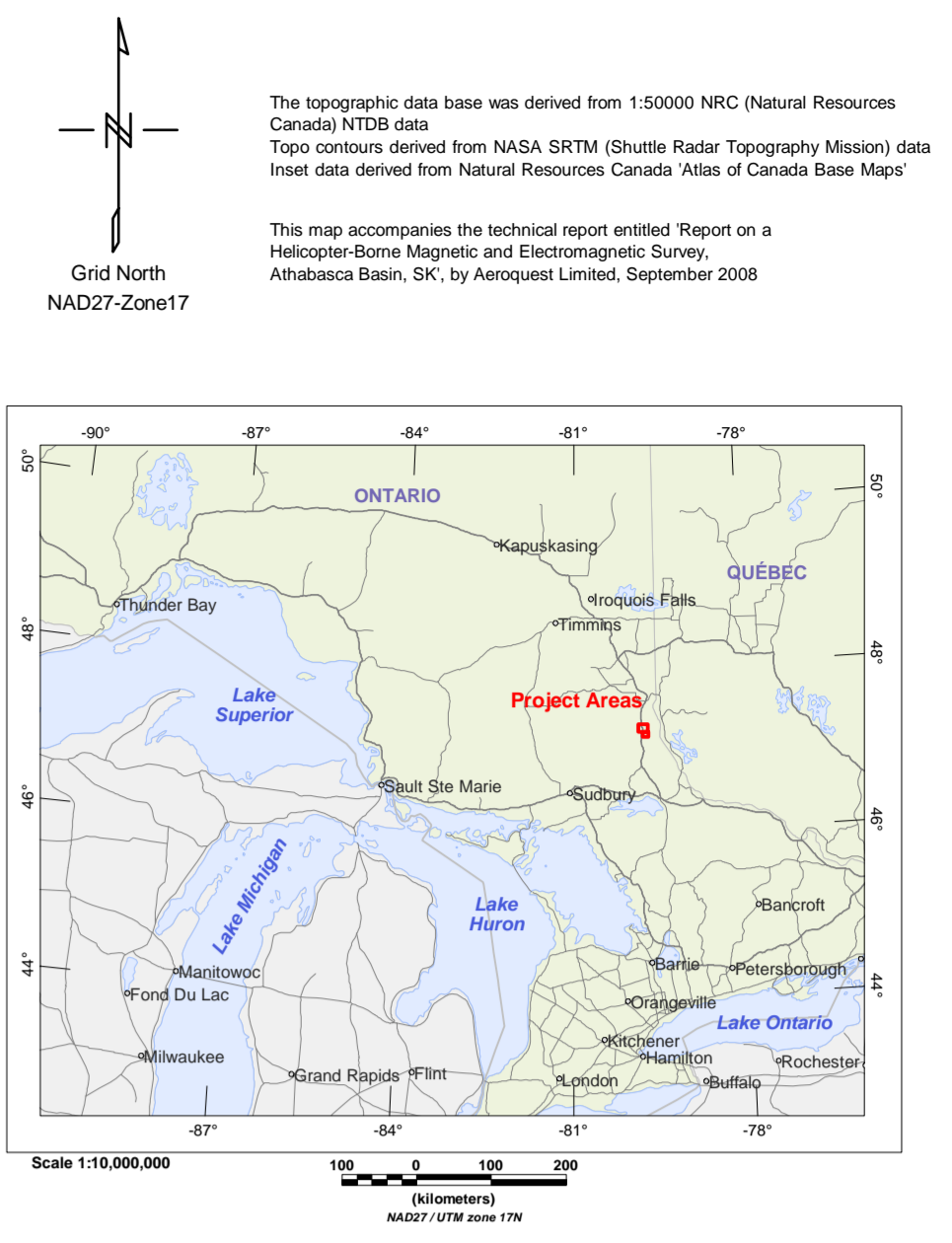
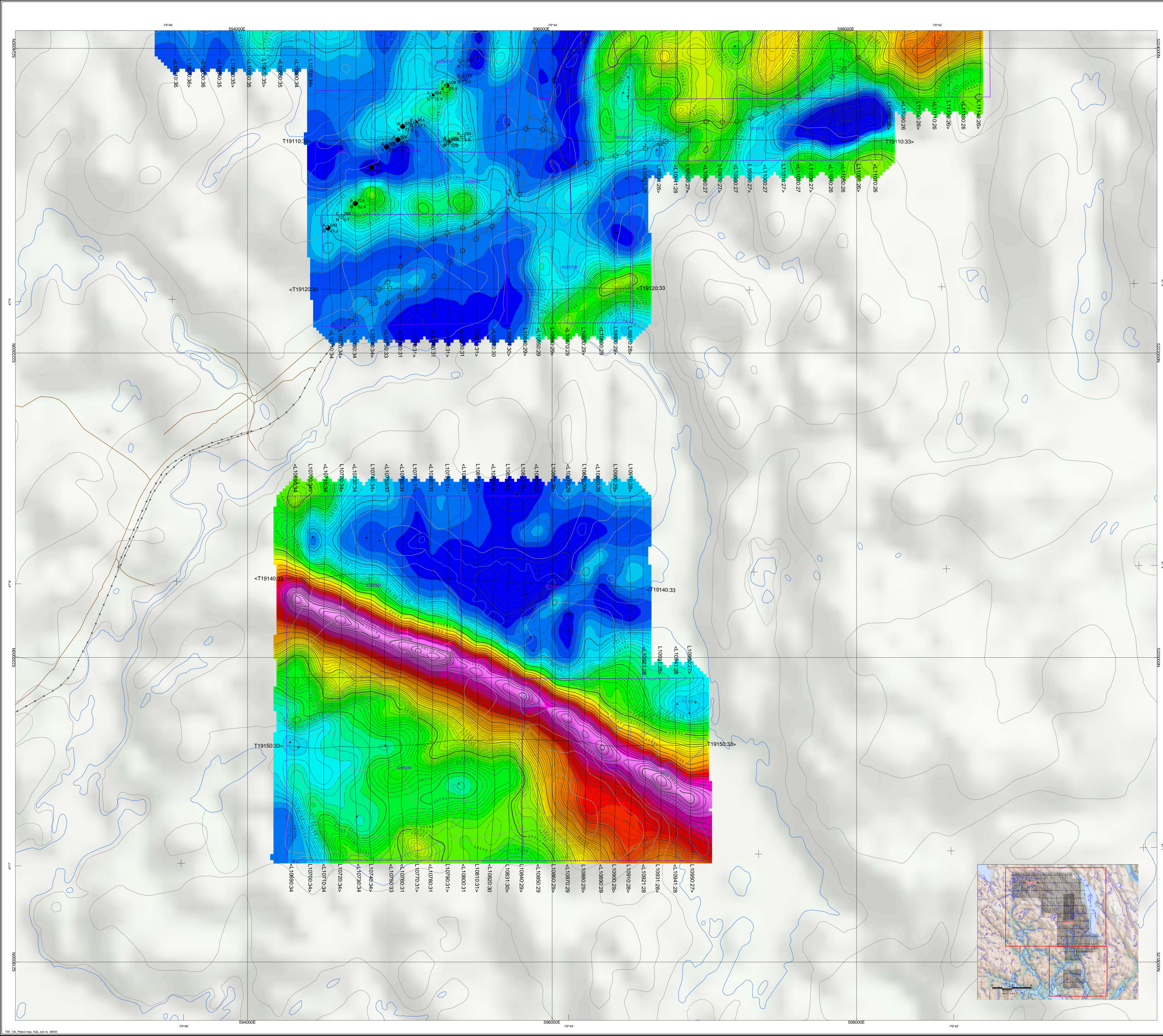


SURVEY SPECIFICATIONS:
 Survey from April 20 May 20, 2008
 Traverse Area: 100 meters
 Traverse Area: 0.75/100
 Nominal Elevation: 20 meters
 Accuracy: Approximate A-Side 3000A (GP/WGN)
POST-PROCESSING:
 Data Acquisition: ADAS & RING (GP/WGN)
 Magnetometer: Geometrics G-824 (sensor error)
 Installation: Towers set 30 m above EM bed
 Sensitivity: 500 nT/mV/m
 Electromagnetic: AeroTEM IV System (PAPA)
 Configuration: Tower base
NAVIGATION:
 Navigation: Differential Global Positioning System (DGPS)
 Navigation equipment: RTKLIB with RTK TECH PANDA receiver
 Flight Altitude: 1500 feet
DATA PROCESSING:
 Magnetometry: Manual, before and after processing corrections
POINT KNOWLEDGE:
 Datum: NAD83
 Map Area: 0.12500 400
 Elevation: 418027184
MAP PROJECTION:
 Projection: Universal Transverse Mercator
 Central Meridian: 87°W (Zone 17)
 Central Scale Factor: 0.9996
 False Easting/Northing: 500,000.00m



Temex Resources Corp.
 New Liskard Area, Ontario
**AEROTEM
 Z1-OFF TIME**
 Block A & Block B
 NTS 031M06.05





SURVEY SPECIFICATIONS:
 Survey flown: April 29-May 28, 2008
 Traverse line spacing: 100 metres
 Traverse line spacing: 0°/180°
 Nominal EM bird height: 30 metres
 Aircraft: Aerospatiale A-Star 350BA (C-FWEN)

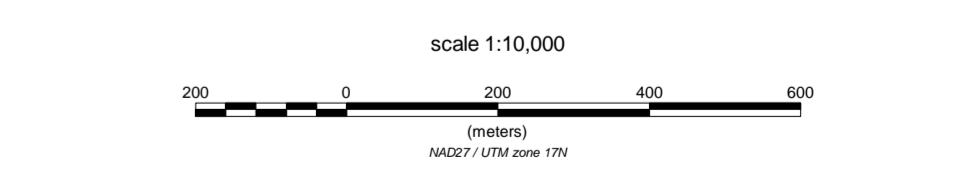
INSTRUMENTATION:
 Data acquisition: ADAS & RMS DGR-33
 Magnetometer: Geometrics G-823A cesium vapour
 Installation: Towed bird 33 m above EM bird
 Sensitivity: 0.01 nanoTesla
 Electromagnetics: AeroTEM IV System (PAPA)
 Configuration: Towed bird

NAVIGATION:
 Differential: Differential Global Positioning System (DGPS)
 Navigation equipment: AGNAV with MID-TECH RX400p receiver
 Radar Altimeter: Terra TRA3000TRI-30

DATA PROCESSING
 Magnetics: diurnal, tie-line and micro-leveling corrections

POSITIONING
 Datum: NAD27
 Major Axis: 6378206.400
 Eccentricity: 0.082271854

MAP PROJECTION
 Projection: Universal Transverse Mercator
 Central Meridian: 87°W (Zone 17)
 Central Scale Factor: 0.9996
 False Easting/Northing: 500,000m/0m



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 New Liskeard Area

TOTAL MAGNETIC INTENSITY
 Block A
 NTS 031M04

